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# HITLER AT WAR

The Führer as a field commander – plus,  
Third Reich strategies, tactics and weapons

BLITZKRIEG ORIGINS ★ REAL-LIFE 'DAS BOOT' U-BOAT

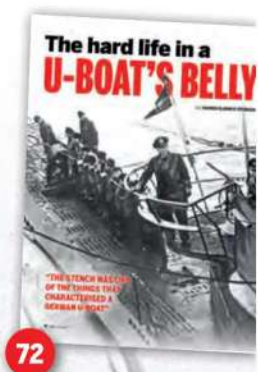
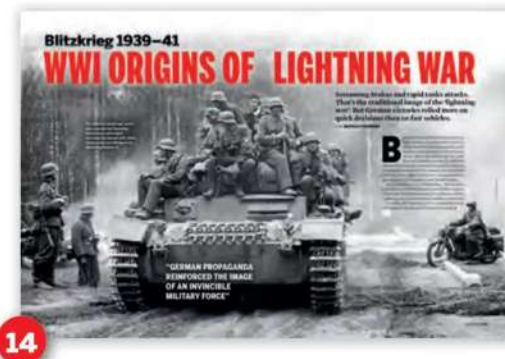




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German soldiers march through recently occupied Paris in June 1940.







# A well-oiled war machine

**T**he German Army's triumphs from 1939-41 never cease to amaze. Revolutionary tactics and new weapons have often been portrayed as explaining how Germany, which struggled with major problems in the two decades after World War I, was suddenly capable of bringing most of Europe under its heel.

In hindsight, however, how much was truly radical in the recipe behind the German Wehrmacht's success, and how much was based on classic military tactics? Most of the technological advances

associated with Nazi Germany weren't available to its forces until its initial impetus had been halted – for example, both Panther and Tiger tanks weren't deployed until 1942-43. It's ironic that the Germans prospered most on the battlefield when they had an inferior selection of tanks.

Nevertheless, German engineering during this period is fascinating, and in this special issue we've compiled several informative (and entertaining!) features on both the Wehrmacht's command culture and its best weapons from the period.

Enjoy the issue!

**“Much was based on classic military tactics”**



# FÜHRER ON THE

## Blitzkrieg offered Hitler power



Was Adolf Hitler a strategic military genius or a choleric corporal who played at being general? Professor Lars Ericson Wolke has analysed Hitler's actions as a field commander and finds a dictator who put his own ambitions of power before rational leadership of the Wehrmacht.

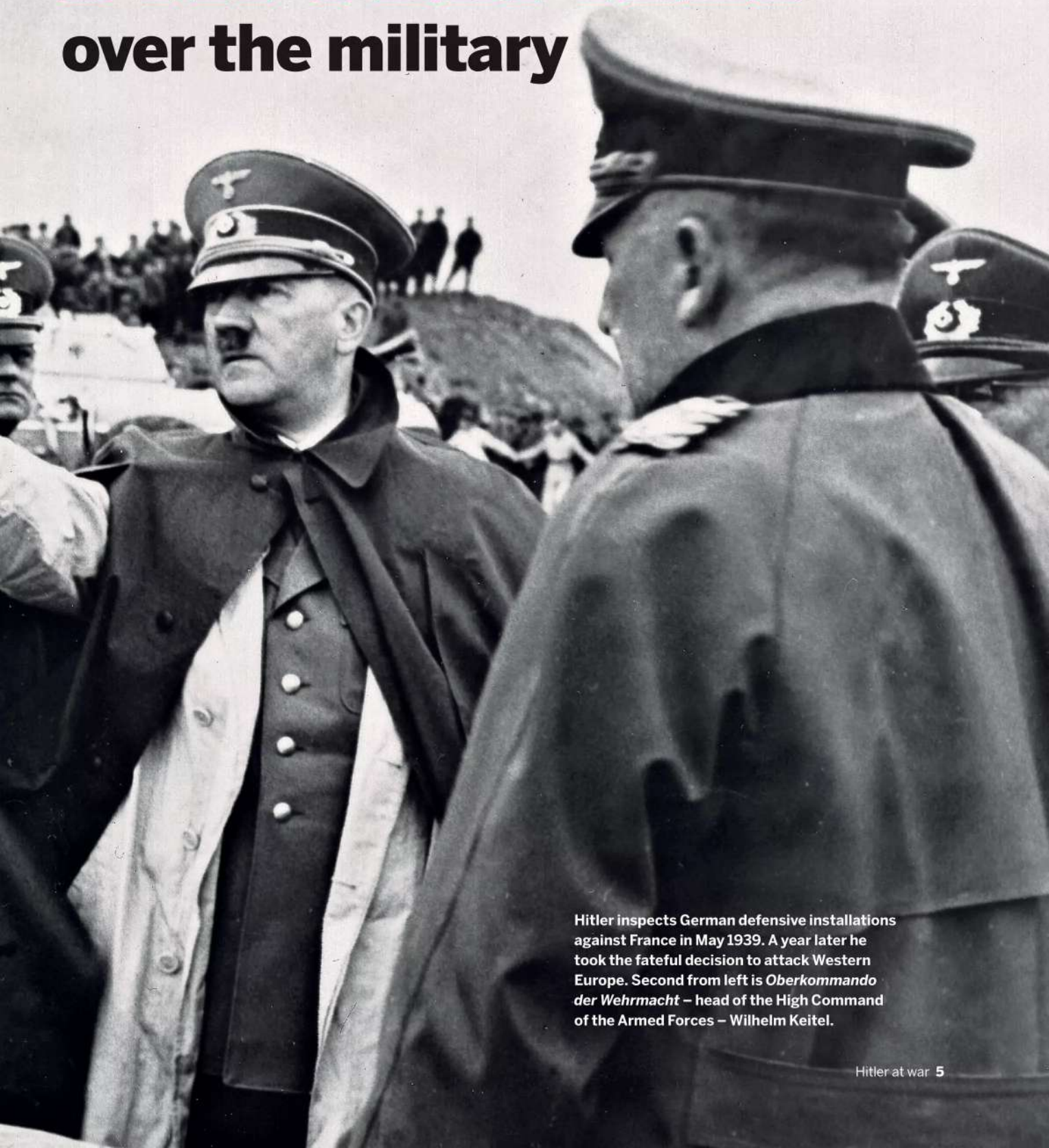
Text: **LARS ERICSON WOLKE**

ULLSTEIN BILD/ALL OVER PRESS



# BATTLEFIELD

over the military



Hitler inspects German defensive installations against France in May 1939. A year later he took the fateful decision to attack Western Europe. Second from left is *Oberkommando der Wehrmacht* – head of the High Command of the Armed Forces – Wilhelm Keitel.



# HITLER AS MILITARY LEADER

**F**ew events in history have been as well documented as Adolf Hitler's military operations during World War II. Despite this, there is reason to reflect on the German Führer's role as a leader in 1939-45. Few people in world history have wielded power over such an enormous and effective war machine as the Austrian-born dictator during WWII, and thus Hitler's personal involvement is critical to our understanding of military activities.

**HITLER OFTEN POINTED** out that he had more direct experience of war than many of his generals, and so claimed a deeper understanding of its realities. It undoubtedly sounded arrogant, but Hitler had a point: several of the leading generals in World War II had held various staff positions behind the front during WWI. Generals such as Brauschitsch, Bock, Leeb and von Rundstedt had all performed staff roles at a safe distance from the trenches, partly because their brilliance had been revealed early on, making them sought-after in these critical positions. Hitler had some experience of the front, partly as a courier, but also from life in the trenches on the Western Front.

As such, Hitler was technically correct, but the question is how relevant those different experiences were. Hitler showed little interest in the regular soldier's everyday life and suffering during 1939-45, not even during the increasing chaos on the Eastern Front towards the end of the war. Nor are there any perceptible signs of his personal experience of war – and thus his greater understanding of the soldier's experience in combat situations – having any influence on his assessments of the war situation or his demands on the military forces. So, his experience was barely relevant to any evaluation of him as a field commander.

In contrast, his senior generals who'd served in various staff roles during WWI had gained valuable experience of recruitment at several levels, as well as knowledge of how to best exploit the complex interplay between different military functions such as intelligence, logistics, and management to meet operational targets.

**HITLER REALISED EARLY** on that he had to take control of the armed forces to secure his political position and, not least, pursue his plans for *Lebensraum* – living space – in the east. His opportunity arrived with the so-called Bomberg-Fritsch affair in 1938

The campaign in Western Europe was used to build the myth of Hitler as a skilled commander. Coloured image from Paris taken on 23rd April, 1940.





when two senior military figures were dismissed for scandals that, to a degree not yet fully understood, were engineered by the secret police Gestapo. The reason was that sections of the military leadership had opposed Hitler when he revealed his plans for territorial expansion in autumn 1937 – if necessary, using military means. Admittedly the military had nothing in principle against the idea, but they believed the German armed forces weren't yet ready for a confrontation with Western powers.

Instead of appointing a new head of the Ministry of War in February 1938, Hitler established the *Oberkommando des Heeres* (OKW), or High Command of the Armed Forces under the command of Reich Minister General Wilhelm Keitel, who quickly became Hitler's loyal tool. The army's own high command (OKH) still retained operational leadership of the forces on the ground, but was now subject to the OKW and thus, ultimately, Hitler. When setbacks started piling up on the Eastern Front from December 1941 until the disaster in Stalingrad in January-February 1943, the Führer fired several prominent and independent OKH chiefs of staff.

**AS THE WAR** progressed, Hitler increasingly exercised direct operational leadership – sometimes entirely against the advice of the country's leading generals – convinced that he understood the realities of war better than them. Moreover, Hitler began to intervene in purely tactical decisions, sometimes right down to the regimental level. This created great uncertainty among staff and corps commanders about where responsibility lay. The Führer's interventions also meant the flexible German operational tactics, which had produced notable victories in 1939-41, were often replaced by a rigid command control from the highest levels.

One often overlooked method Hitler employed to achieve this was his insistence that he alone had an overarching view of all military strategic and operational issues. He reduced the OKH's role to operational responsibility for actions on the Eastern Front, which were undoubtedly important enough. But at the same time, it was announced that all remaining fronts in the south, west and north were 'OKW theatres' – in other words, fronts where the OKW exercised the highest operational responsibility and thus also received

**“[Hitler] alone had an overarching view of all military strategic and operational issues”**



**Hitler (left) often played up his alleged field experience from the World War I trenches when he overruled his generals.**

the latest insight into the situation on each front. Although independent generals such as Heinz Guderian remained critical of Hitler's handling of the war, they received fewer opportunities to propose alternative strategies. They were merely disconnected from command of all fronts except the Soviet one. Thus, their insight into operational conditions on other fronts was quickly out of date.

To demonstrate, we'll look at four different decision scenarios, where Hitler came to play a decisive role.

## **INVASION OF WESTERN EUROPE, 1940**

Operation Gelb, the plan for the German attack on Western Europe in May 1940, is usually cited as an example of how Hitler supported unconventional operational planning in clear contrast to almost all military leadership. The result was an unexpected victory that created the myth of Hitler as the great commander – not least to himself, which is crucial in this context. Hitler had previous form – he'd gambled politically during the Sudeten Crisis and won in 1938, and now he'd succeeded with a military gamble in 1940. In both cases, he'd acted directly against the advice of his generals.

In the assessment of the victory in 1940, it's important to emphasise that the operation's plan had been prepared by one of the Germany Army's ►



## HITLER AS MILITARY LEADER

► sharpest brains, General Erich von Manstein; it wasn't Hitler's own work. While German military command had argued for a variant of the plan used in 1914, von Manstein based his proposal on exploiting the concept of *blitzkrieg* – lightning warfare – where motorised divisions received close air support rather than from their own artillery behind the front. It revolutionised the speed of advance. Manstein had been von Rundstedt's chief of staff during the invasion of Poland where he saw and learned what needed improving for blitzkrieg to work, such as advanced maintenance resources and a well-developed plan for moving traffic to prevent bottlenecks on the narrow roads.

Hitler's contribution was to give Manstein his support, and that's important, of course, for the historical sequence of events, but it says little about the Führer's abilities as a field commander. Instead, his decision merely emphasises his already established opposition to his senior generals. In 1940, he was lucky to have an alternative – and a good one – to the plan recommended by the military high command. In the future, he wouldn't have such options, and would instead be forced increasingly to build alternative operational plans for himself with increasingly horrifying outcomes.

### WAR IN THE EAST, AUTUMN 1941

The enormous German offensive against the Soviet Union, Operation Barbarossa, took place over three fronts: south, middle (centre) and north. Initially, the main thrust of the operation lay on the central front, which quickly cut through Belarus on a direct course to Moscow.

Hitler's goals for the invasion launched on 22nd June were twofold: to crush the Red Army and conquer significant areas of the Soviet Union. This dualism meant that the generals did not know which operational and strategic goals they should prioritise. The whole operation appears to have been a military gamble with broad parameters: how would the generals know when goals had been met, unless Stalin gave up and surrendered?

During the first few weeks, devastating pincer movements destroyed most of the Soviet units grouped along its western borders. Substantial Red Army forces managed to sneak past the German traps, however, and in the autumn of 1941 new divisions of reservists arrived at the front.

**“The generals did not know which operational and strategic goals they should prioritise”**



The situation meant German attacks became increasingly ineffective, and it was clear that despite tremendous early progress, that the Germans would not be able to continue to apply full force on all three fronts. Operational consolidation was needed. Also, the rapid advance of Army Group Centre had created stretched supply lines and vulnerable flanks.

After several weeks of discussions, the OKW's Chief of Staff, Alfred Jodl, and OKH boss, Franz Halder, reached a compromise in August. Army Group North's advance towards Leningrad should hold back while the significant armoured formation of the 2nd Panzer Group, which belonged to Army Group Centre, would be shared between the central and southern fronts. The hope was that military pressure could be maintained on both Moscow and the Ukraine.

The compromise was barely formulated, however, before the head of 2nd Panzer Group,





Heinz Guderian, paid Hitler a personal visit on 23rd August. Guderian successfully argued that his armoured group should not split into two separate attack units; thus a choice needed to be made on the direction of its attack. Hitler transferred Guderian's forces to Army Group South, and so Army Group Centre was significantly weakened with direct and negative operational results.

In the short term, the redeployment led to German victories around Kiev. Within a month, 665,000 Soviet prisoners of war and vast amounts of military equipment had fallen into German hands.

But this came at a high price. After the conclusion of fighting in the Ukraine, Guderian's armoured group returned to the central front, and Operation Typhoon, the attack on Moscow, could begin. But the Germans had delayed the offensive against Moscow by six weeks, which would prove fatal. Despite substantial progress in Bryansk and

Vyazma in October, the advance halted in front of Moscow at the beginning of December. A surprising Soviet counteroffensive was about to wreak havoc across the entire central front. Only after a huge effort (and losses) was the front stabilised.

Hitler's response was to dismiss large numbers of officers at various senior command levels, a move that has been compared to the French Commander-in-Chief Joseph Joffre's purge of the French General Staff in August 1914, following the disastrous French start to World War I.

This dithering between two different approaches for an entire armoured group and various infantry divisions emphasises the Germans' lack of a clear goal. The result meant they made tremendous progress in the Ukraine, but it almost certainly came at the price of reaching Moscow before winter set in. Of course, it's impossible to say whether retaining the 2nd Panzer Group in the central front would ▶

**Hitler studies a situation report during the campaign in Poland in September 1939. Around him, on the left is General Erwin Rommel, then General Karl Bodenschatz, Colonel Rudolf Schmudt, General Wilhelm Keitel and Martin Bormann on the right.**



## HITLER AS MILITARY LEADER

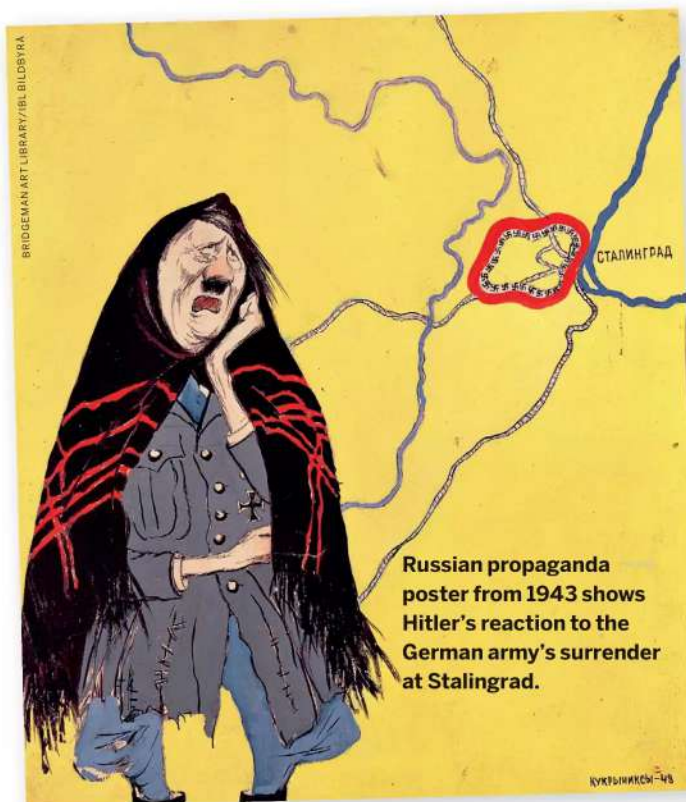
- ▶ have been sufficient to capture Moscow, or that it might have been enough to win the war in the east. But we can recall a bitter Guderian's conclusion that while the "Battle of Kiev was undoubtedly a great tactical victory", it was won at the cost of a strategic victory in Moscow.

The key thing in this context is that German swing door policy towards critical attack units was a consequence of the lack of strategic and operational goals within the German leadership, which stemmed from a lack of competence in the field on the part of Hitler himself.

### STALINGRAD DISASTER, 1942-43

Stalingrad is the perfect symbol of Hitler's determination to control operations down to the last detail, which proved as great as his inability in effective operational management. Contrary to the pleas from his generals, he refused to grant permission to the besieged 6th Army in Stalingrad to break out to safety in the west. Instead, the snare

**"His gradual physical and mental deterioration from 1943 further impeded his decision making"**



tightened bit by bit, and the distance between the German lines at the Don and the army at the Volga grew before finally becoming insurmountable.

Did Hitler regard it as an operational necessity to hold onto the position of the strategically important Volga, or was it simply that he wanted at all costs to capture and hold on to the city that bore the name of his deadly enemy Stalin? We do not know. What we do know is that Hermann Göring had promised that his Luftwaffe would be able to supply the confined 6th Army until a German offensive could drive back the Red Army and free the encircled soldiers. With hindsight, we know that wasn't possible, but Hitler – and for that matter, Göring himself – did not appear to have had that insight.

An essential perspective on the German air force's ability to supply troops is that the Luftwaffe in the period from December 1941 to the spring of 1942 succeeded in supplying large numbers of German troops cut off from the main army in the area east of Lake Ilmen. Perhaps this is what led Göring and Hitler to believe that the Luftwaffe could repeat this logistical feat in the Stalingrad area. Again, we must concede that we don't know. But the result we know too well: a gigantic disaster that marked the turning point in the war both in the east and everywhere else.

### THE ARDENNES OFFENSIVE, 1944

The last big German attack in the west made huge strides initially, but this was due to a combination of surprise and favourable weather conditions. When the clouds literally dissolved and the superior Allied air forces again filled the sky, it marked a definitive end to German offensive capabilities. What did Germany want to achieve with this last move? Was it to reach the port of Antwerp and thus cause huge logistical problems for the Allied armies in Western Europe, or was it an attempt to drive a wedge between the British and Americans? Ultimately, it must have been about attempting to force either Britain or the US out of the war; otherwise there was hardly any rationale to the effort.

At the same time, the situation in the east – not least in East Prussia – was acute, and the wave of Germans fleeing the Red Army had begun to roll west. Here, there were more obvious reasons to deploy the last few remaining mobile units in a counteroffensive. But Hitler chose use those forces on the Western Front: why? This is another conundrum for modern historians, but it was possibly the perception both of him and other leading Nazis that the war against the Soviets was a struggle between life and death that would only end with either victory or annihilation. To win that battle, the war in the west had to come to an end. The Ardennes offensive was ultimately an





WALTER PRENTZ/ULSTEIN BILD/ALLOVER PRESS

attempt by Hitler to release all his forces for the war in the East. But it collapsed, partly because of German inferiority, not least in the air, and partly because they underestimated the Western Allies' determination to secure a victorious outcome.

**THE EXAMPLES ABOVE** could have been multiplied: the stop order at Dunkirk in 1940, the declaration of war against the United States in December 1941, and many more besides. In all of these, Hitler's motivation is difficult to interpret.

By the end of the war, many of Hitler's military decisions seem, in retrospect, eccentric to the point of folly – possibly even to complete insanity. His gradual physical and mental deterioration from 1943 further impeded his decision-making and inevitably had an impact on the post-war judgement of his operational decisions.

The old president and WWI field marshal Paul von Hindenburg contemptuously regarded Hitler as little more than the corporal he'd been during World War I, in a trench world far from Hindenburg's own. That image has also been reproduced in many of the post-war reviews of Hitler's military decision-

making during WWII. But any assessment of the Führer's abilities must consider three key factors.

First, we now know – thanks to American Timothy Ryback's research – that Hitler had an extensive library, particularly rich in subjects such as military history, war science, military theory and military technology. It's always difficult to determine whether someone has actually read the books he or she owns or borrows from a library, but there are indications that Hitler both read and embraced the knowledge in his books. Whether he properly digested this knowledge is more debatable.

Second, the chain of command in the Third Reich was extremely unusual. Any formal bureaucratic procedure was frequently bypassed and, in practice, the government had already ceased to function by the 1930s. Instead, most of the decisions were made when Hitler met with small groups of military or civilian advisers; he clearly didn't relish major meetings with ministers and officials. Instead, Hitler announced decisions to individual subordinates, who passed them further down the chain and ensured that they were implemented. In this way, Hitler made sure his subordinates battled ►

**Romanian president Ion Antonescu (in brown uniform) visits Hitler's headquarters in East Prussia on 2nd November, 1942.**



## HITLER AS MILITARY LEADER



Adolf Hitler photographed in Rügenwald in 1942. Behind him are generals Guderian (left) and Keitel.

### Generals blamed Hitler

★ It seems obvious that there was an intense personal need among surviving German generals to distance themselves from the Nazi hierarchy in general, and Hitler in particular, at the end of the war in 1945. In part, they would prove their personal innocence with respect to the Holocaust and other war crimes, and second, they'd protect their military reputations. If they could demonstrate that Hitler had been responsible for the flawed decisions – often contrary to the advice of his generals – they could wash away some of the armed forces' responsibility for Germany's defeat.

British military historian and theorist Basil Liddell Hart was the main source of this attempt to shift blame from the military leadership to Hitler personally, through his interviews with those German generals detained in Britain after the war. Liddell

Hart met men like Günther Blumentritt, Hasso Manteuffel, Wilhelm von Thoma, Kurt von Tippelskirch and Gotthard Heinrici. The result appeared in the book *The Other Side of the Hill* in 1948, since republished in several editions.

In the 1950s, Basil Liddell Hart had close contact with Heinz Guderian. A common thread in all these interviews – critically difficult to handle sources, but interesting nonetheless – is how Hitler intervened in the management of military operations with dire consequences. The best summary of the general's view of the result comes from the title of General Erich von Manstein's published memoirs from 1958: *Verlorene Siege* (published in English under the title *Lost Victories*). Von Manstein leaves the book's readers in little doubt about who the generals deemed to be the guilty party in the eponymous lost victories.

► for his attention, thereby further consolidating his position of power. There are rational reasons for this approach from a strictly political perspective. From a state management perspective, however, it was devastating, especially in the later war years when an increasingly exhausted Hitler was unable to take an interest in any issues other than the most pressing concerns at the front. Exacerbating the situation further, Hitler's deputy, Luftwaffe Supreme Commander Hermann Göring, gradually withdrew from all public and active political leadership in the years 1941–43. This left large parts of state policy in Germany and the occupied territories unmanaged or in the hands of enterprising (power-hungry) decision makers such as the Minister of Armaments Albert Speer or SS chief Heinrich Himmler. As with the pre-war years, these departments were managed in such a partisan way to avoid any genuine cooperation with other parts of the state administration, and so their decisions had limited impact.

This on-the-hoof decision-making also meant that important decisions were never put in writing and formalised, nor were they subject to the traditional bureaucratic assessments of their significance and consequences. Not only was this approach to controlling Europe's most powerful nation not particularly rational, it also has implications for our research, which leads us to the third factor.

Since few important decisions – military or civil – in Nazi Germany were formally documented, we don't know who influenced what in the actual decision-making process. Were these Hitler's self-willed pronouncements, or was he influenced by one or more advisers such as his private secretary Martin Bormann? This also applies to such important issues like the appointment of Hermann Göring to head the economic 'Four Year Plan' in the 1930s as well as who made the final decision on the Holocaust. The same holds true for numerous military decisions. It's telling that the main sources recording the military decisions made in Hitler's headquarters – particularly the Wolf's Lair in East Prussia – originate from senior officers' diaries or post-war memoirs. After the war ended in 1945, it was in these officers' self-interest to avoid taking responsibility for Germany's Armageddon. It was convenient – and easy – to just blame Hitler for everything.

**AGAINST THIS BACKDROP**, it's probably prudent to lift our perspective from the operational decision level to a higher strategic one. By studying the absence of important decisions, we also gain insight into Hitler's role as the senior military commander. He clearly lacked a full understanding of the link between the country's overall war effort and its military operations. In this respect, he deviates from WWI leaders Hindenburg and



German Wehrmacht soldiers are taken away as prisoners of war after the surrender at Stalingrad in 1943. Despite defeat on the Eastern Front, no decision was made by Hitler to put Germany on a total war footing.



Ludendorff, who from 1916 attempted to reshape Germany for an all-out war effort. They didn't succeed, but they understood the need to do so.

**IN A GERMANY** that accelerated rapidly towards total defeat in 1943-45, it was only in the summer of 1944 that production of war materiel reached its height, and by then it was too late. Speer, propaganda minister Joseph Goebbels and several other leading decision makers were concerned enough to try and persuade Hitler to mobilise Germany to make a consolidated war effort – both industrially and socially – from the start of 1943, but it was in vain. Perhaps he didn't understand the acute need, or perhaps Hitler simply didn't dare to, in view of the alarming signals such measures would have sent out to the German people.

In wars between industrialised states endowed with conscripted armies, more is required of a supreme commander in the field than to merely conduct military operations. Both Hitler – and the Nazi government in general – lacked the ability to go further; it was in stark contrast to the Soviet Union's collective society as built by Joseph Stalin.

At the operational level, Hitler's dislike of independent-minded generals led to growing overconfidence in his own ability. Increasingly, he leaned on the ever-dwindling number of generals who blindly obeyed orders and held out long after all hope was exhausted. Ferdinand Schörner personified this type of military commander

**“Perhaps he didn't understand the acute need, or perhaps he simply didn't dare”**

with his stubborn and costly leadership of Army Group North's defence of the Baltic States between July 1944 and January 1945, and then to an even greater extent as head of Army Group Centre in Czechoslovakia until April, when he was appointed field marshal for his loyalty to the Führer.

Schörner was named Hitler's successor as commander-in-chief when the dictator eventually committed suicide, a role he held for around a week. This constant passion for stubborn resistance rather than adopting flexible defensive tactics is often cited as clear proof of Hitler's lack of ability as a military leader. But maybe, just maybe this constant demand to endure – from December 1941 outside Moscow to the final battles in Berlin in 1945 – was the only possible response when ever-dwindling resources in the form of fuel, vehicles and other essential materiel made it impossible to offer other operational solutions. Perhaps this could demonstrate a type of operational insight, even if it's not clear whether Hitler himself ever understood the full significance of it. ■

**Lars Ericson Wolke** is a writer and professor of military history at the Swedish Defence University.

**Further reading:**  
**The Third Reich at War** (New York 2009) by Richard J. Evans ★ **Hitler, 1933–1945** (London 2000) by Ian Kershaw ★ **The Dictators – Hitler's Germany and Stalin's Russia** (London 2005) by Richard Overly.



# Blitzkrieg 1939–41

# WWI ORIGINS OF

The German 'blitzkrieg' tactic was used during Operation Barbarossa and helped Germany win terrain fast. Here, infantrymen are sitting on an advancing Panzer III.

**“GERMAN PROPAGANDA  
REINFORCED THE IMAGE  
OF AN INVINCIBLE  
MILITARY FORCE”**



# LIGHTNING WAR

**Screaming Stukas and rapid tanks attacks. That's the traditional image of the 'lightning war'. But German victories relied more on quick decisions than on fast vehicles.**

Text: **MATHIAS FORSBERG**

**B**etween 1939 and 1941, the German army won a series of spectacular victories on the battlefield and captured half of Europe. Newspapers in all countries wrote about the 'lightning war' and how the Germans repeatedly defeated enemies that, on paper, seemed far superior. German propaganda reinforced the image of an invincible military force, supported by new weapons such as paratroopers, dive bombers and modern tanks.

The 'lightning war' – or 'blitzkrieg' – has become synonymous with the Germans' remarkable progress on the battlefield. But how much of what we call the 'lightning war' was the result of a military revolution?

In reality, the 'lightning war' was simply the latest development in the art of Prussian-German ►

EUROPEAN/FFO/GETTY





## BLITZKRIEG 1939-41

► warfare. It started with Frederick the Great's disciplined line infantry in the mid-18th century and culminated 200 years later with Hitler's armoured offensives.

**WHEN WORLD WAR II** broke out on 1st September, 1939, the German army was still relying on tactics developed during World War I. In fact, the principles that were used throughout the conflict were drawn up in 1921. It is often said that the French and British armies employed 'obsolete' tactics, but that was equally true of the Germans.

The important thing about tactics, of course, is how effective they are, not how old they are. The Germans inherited tactics that emphasised mobile warfare and improvisation, which suited the increasingly important role of tanks. Later, observers called this tactic 'blitzkrieg'. However, that term was never used by the Germans – it was coined by *Time* magazine in 1939.

On the first day of the war, the German 1st Panzer Division advanced 25 kilometres into Polish territory and into the city of Klobuck. The Germans had probed the Polish defences, found a gap in the lines and took advantage. The advance was conducted exactly according to the 1921 playbook. However, in this case, the advance of the panzer division was the exception that confirmed the rule.

Most German soldiers in Poland heard no shrieking Stuka dive bombers, nor witnessed

**The map shows how Germany used a pincer movement to invade Poland. Most of the action was carried out by foot soldiers with horse-drawn artillery.**



**The Poles didn't give in without a fight, but they couldn't match the Germans in mobile warfare. They also had inferior arms. Polish soldier in 1939.**

tanks encircling the enemy in daring pincer movements, supported by paratroopers. Most of the action was carried out by infantry divisions with horse-drawn artillery and foot soldiers. The few motorised vehicles that were used at this time in a typical infantry unit tended to be allocated to reconnaissance units or to the division's staff.

The 1st Panzer Division was part of the 10th Army, which was the strongest of the German armies and was led by General Walther von Reichenau. The 10th Army would, starting from Silesia, advance north towards Warsaw. The 4th Panzer Division attacked shoulder-to-shoulder with the 1st Panzer Division, but without much luck. In fact, the 4th Division barely advanced one metre.

Polish units, among them a cavalry brigade, defeated several German divisions on the first day of the war and inflicted losses on the Germans. Some soldiers from a motorcycle company were captured as prisoners of war, while elsewhere on the front, German infantrymen confused retreating German tanks with Polish ones and fled headlong in a case of 'tank panic', a phenomenon that hit the German army only a handful of times during the war.

**THE QUESTION, THEREFORE,** is why the German army was able to capture Poland in less than a month. The answer is that the German art of war was superior to that employed by the Polish. The tactics were better: the Germans acted faster and exploited the terrain better.

The German equipment was also better than the Polish, although the difference was not decisive. More important was the Germans' willingness to put men at the centre of their mobile warfare.

The most crucial aspect of what we refer to as the 'lightning war' was its organisational philosophy







German soldiers march on muddy Polish roads on 13th September, 1939 – the reality was far from the propaganda image of a motorised war.

and the way it viewed leadership. The rationale came from World War I with the so-called stormtrooper tactics. After several years of stagnant warfare, the German army began to rely less on mass firepower – in Flanders they had bombarded the enemy lines with artillery for a week before an assault – and instead switched the emphasis to surprise tactics, deploying smaller units that were capable of acting independently and resolving unexpected problems on the battlefield without the offensive grinding to a halt.

The key to this was to shift the centre of gravity for decisions as far down the command chain as possible. Senior staff should concentrate on overarching goals and resource allocation and empower leaders in the field to take command, permitting them to analyse changing events for themselves and take appropriate action to secure the overall objective.

**SEVERAL GERMAN OFFICERS** associated with daring tank manoeuvres during World War II, such as General Erwin Rommel, had led divisions in 1918 and understood how to use this model to fight successfully. In 1918, however, the

## “THE GERMAN ART OF WAR WAS SUPERIOR TO THAT EMPLOYED BY THE POLISH”

German geostrategic situation was so precarious that limited victories on the battlefield could not change the outcome of the war. But the tactics gave the Germans sufficient experience to prepare a working analysis after the war was over.

**THE GERMAN RULES** for the army – *Führung und Gefecht der verbundenen Waffen* – were drafted in 1921 and remained unchanged throughout the war, despite rapid technical developments. The tactics made it possible for the army to retain its core values but still change as new technology – such as tanks – were introduced.

One problem that arose quickly was the army's ability – or lack of it – to gather its forces during offensive operations, which runs counter to the ►





A common sight during the Invasion of Poland – German horse-drawn artillery. Here, a grenade-launcher unit crosses a watercourse on 6th September, 1939.

ULLSTEIN/GETTY

► idea of decentralisation and independent thinking. In order to overcome this problem, the Germans instigated a standardised regime for officer training, so that all of their commanders would share the same mindset, which in turn would make it easier to coordinate operations.

**IN THE 1930s**, both the British armed forces and the Red Army were more radical than the Germans in their view of armoured warfare. The tank's arrival accelerated discussions about battlefield tactics – a discussion that is somewhat akin to how the introduction of e-commerce has affected the strategies used in real-world stores and shopping centres. The way armoured units were deployed depended on tactical assessments. For example, in some armies, armoured units were formed into their own independent units and not in others.

In Britain, the theoretical discussion, which included input from the military theorist Basil Liddell Hart, dealt more with the 'revolutionary contribution' that tanks could make if used within large formations. As a result, the British Army opted to become fully motorised, while the German

Army's infantry divisions lacked vehicles even late in the war.

**THE RED ARMY** established a large number of independent tank units, including entire brigades. The establishment of dedicated tank units in the *Heer* (German Army) was thus not particularly groundbreaking. But German training and tactics meant that German officers became exceptionally skilled at leading those tank formations in battle.

Another factor that improved the abilities of German officers came, ironically, as a result of the Treaty of Versailles, which was supposed to blunt Germany's military capabilities, but in fact helped sharpen them. The treaty limited the German armed forces to 100,000 men, of whom 4,000 were officers. This meant that most of the personnel were over-qualified for their position and could easily be given higher ranks when the army began to expand in the 1930s. The small size also meant that any tactical changes could be disseminated rapidly throughout the organisation.

The Luftwaffe was first established in 1935 and became more politicised than other branches of



**General Erwin Rommel in 1942.**

BUNDESARCHIV, BILD 146-1977-018-13A / OTTO/CC-BY-SA 3.0



the armed forces; many Nazis were appointed to senior positions and Hermann Göring became its head. There was no Prussian tradition or cadre of old officers – everything was built from scratch. Nevertheless, historical precedents still affected the German air force because its primary role was to support the army on the battlefield. Imperial forces, such as Great Britain, used its bombers in completely different spheres of activity, as the RAF was expected to patrol sea lanes or act as an airborne extension of the artillery in remote colonies. The Germans' expectation of a short-lived war in Europe gave the Luftwaffe a different focus.

**THUS, THE ATTACK** on Poland started on 1st September, 1939, with both victories and setbacks for the German army. The setbacks were not unexpected. Most of the soldiers in the German units had no combat experience and the army had undergone a rapid expansion. Experienced officers were thin on the ground, there was a shortage of materiel and they were inexperienced at coordinating operations. However, the situation was the same for the Poles, who had also enlarged their military forces. The difference was that the Germans exploited the chaos of the battlefield to their advantage, while the Poles instead lost their cohesion and offensive momentum. When the situation no longer matched that foreseen in the original plan, they were unable to adapt to keep up with the Germans.

If we return to the 4th Panzer Division on the second day of the war, it becomes clear how German battlefield tactics influenced the outcome. As mentioned, the division stalled on the first day, but three days later it had broken through the Polish front line and, after eight days, had travelled 400 kilometres to reach Warsaw's suburbs.

The 1st Panzer Division's advance had forced the Poles in front of the 4th Panzer Division to retreat, despite their successful resistance, because the 1st Panzer Division was threatening to outflank them. After a few days, the Germans had advanced so deeply that the Polish units could no longer regroup and form a defence further north. The fight in the south was over.

**AN ADVANCE OF** 25 kilometre in a single day may not sound particularly impressive, but it's important to bear in mind that an advance of this type happens in fits and starts. The line advances, but has to stop when the road swings around a corner or it encounters terrain that could contain defensive works or a concealed ambush. Then the advance must halt, while foot soldiers investigate the terrain and neutralise any threats. Sometimes, the Germans tried to eliminate these time-consuming moves by

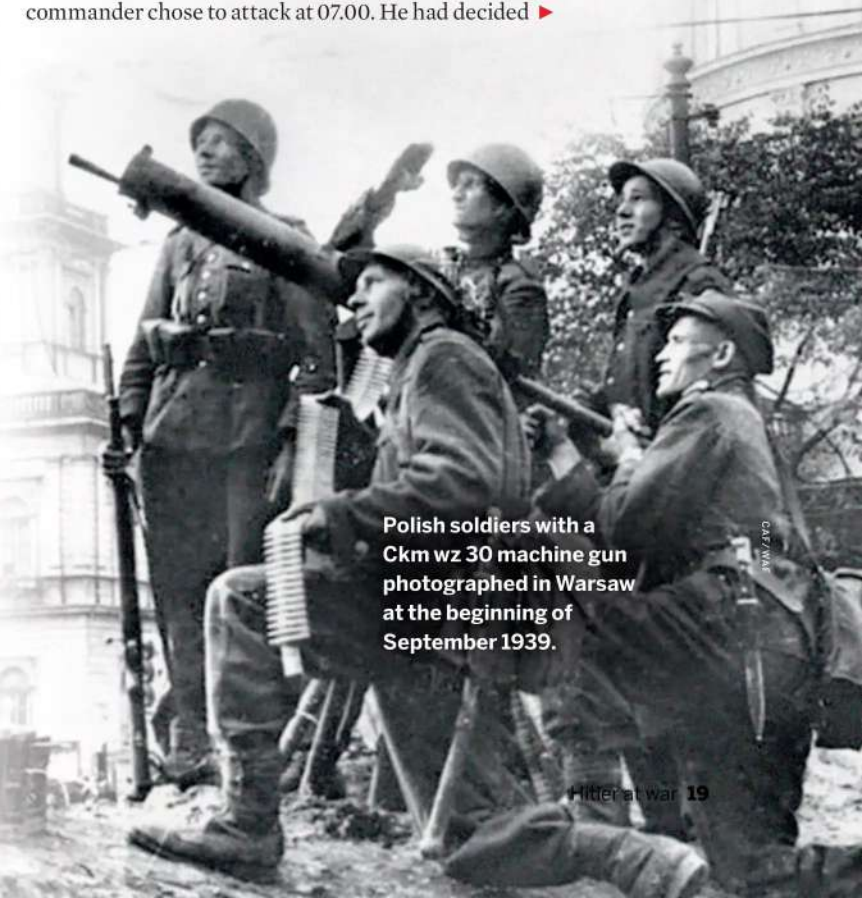
## “THE POINT OF GERMAN TACTICS WAS TO ATTACK WHERE THE ENEMY WAS WEAK”

sending a small artillery party to scout ahead, rather than waiting for reinforcements.

It was different with the US Army, which was easier to stop. In Normandy in 1944, the Germans discovered that firing a couple of machine guns was often sufficient to make whole US battalions halt, or even retreat, until artillery or air support arrived.

By the time reinforcements appeared, the Germans had regrouped elsewhere. They then opened fire from their new positions, and the procedure would be repeated, slowing US advances to a crawl. On the contrary, the Germans in Poland reacted quickly and resolutely. Their speed made it easier to surprise the defenders. The devolved command structure meant that the German units were always one step ahead of the Polish.

**SOMETIMES, HOWEVER, IT** went wrong, as was the case when units from the 35th Panzer Regiment began their attack on Warsaw on 9th September. Despite having exhausted soldiers, maintenance problems and parts of the division that hadn't arrived at the assembly area, the regiment's commander chose to attack at 07.00. He had decided ►



Polish soldiers with a Ckm wz 30 machine gun photographed in Warsaw at the beginning of September 1939.



## BLITZKRIEG 1939–41

► that the situation on the Polish side was even worse than on his own and that a swift assault would bring victory. However, the attack soon developed problems, which are described in detail in the account given by the unit's commander First Lieutenant Eberbach in the book *Knights Cross Panzers* by Hans Schäufler:



Lieutenant-General Georg Hans Reinhardt led the 4th Panzer Division.

*"1st Battalion moved out to attack Warsaw... The artillery fired a preparation on the city's edge in advance. Our tanks rolled across the road bridge, followed by the riflemen. Together with the engineers, the first obstacle was eliminated. The city was defended with the courage of desperation. Despite that, the second bridge was taken. The riflemen had to take each house to clear it. Burst of machine-gun fire, hand grenades dropped from above and tossed from cellar openings, blocks of stone dropped from the roofs – all of these made it difficult for the men."*

Lieutenant Esser managed to get to the railway by driving through side streets and across

courtyards. However, he was stopped by the Polish defences. Sergeant Ziegler took command of the remaining tanks and almost reached the train station, but was forced back. Lieutenant Claas' tank still drove forward along the main street. A camouflaged artillery gun hit the tank twice, setting it on fire.

The order to fall back to the lines of departure came at around 11:00, following a four-hour attack. At first, shockingly few tanks returned: just a handful of the 120 that had set out in the morning. By the afternoon, 91 had made it back to their lines, but only 57 were serviceable. The battle in the urban landscape had radically reduced the panzer division's strength. It had also cost the Germans eight dead and 15 wounded.

**THE ATTACK ON** Warsaw is sometimes highlighted as an example of the fact that tanks are not suitable for use in built-up areas. But it shows that the quality of the German tanks was not a decisive factor in the campaign in Poland.





## “THE QUALITY OF THE TANKS WAS NOT A DECISIVE FACTOR”

The 4th Panzer Division was endowed with Panzer I and Panzer II lightweight tanks that were more comparable to armoured vehicles than tanks. The Germans also lacked decent medium-sized tanks.

If the Germans had possessed more solid tanks, however, they still couldn't have captured Warsaw any faster than they did.

The point of German tactics was to attack where the enemy was weak and overpower him. In Brest-Litovsk, for example, the Germans stormed in with tanks and took the city, which afterwards had the dubious honour of showing that tanks could be used in cities as long as the city is intact to begin with and is taken by surprise. It

**German infantrymen crouch behind Panzer I tanks during the battle of Warsaw on 27th September. The city fell two days later.**

also made it clear that tanks don't work at night or in a shattered environment.

The 4th Panzer Division's advance during the Polish campaign showed three things clearly:

- The German army was tactically skilled (given the rapid advance).
- Progress was not due to the Germans having better tanks.
- Aircraft took a secondary role in the campaign.

The modern perception of the Luftwaffe's role is sometimes unduly influenced by the propaganda of the period, where Stuka bombers were presented as a form of 'extended artillery' for the army.

It's something of a half-truth – co-operation between the tank divisions and the air force was not practiced before – nor did it occur to any major degree during – the campaign in Poland. However, the Germans did have a fully developed capacity for such combined operations when they advanced on the Caucasus in the summer of 1942.

In Poland, the Luftwaffe primarily attacked railway junctions or bridges, targets that were ►



ULSTEIN/GETTY



Junkers Ju 87 Stuka is often called the 'blitzkrieg's' flying artillery, but the coordination between air and ground forces was poor until 1942. This photo was taken during the Battle of France in 1940.

## "AFTER THE INVASION OF POLAND, THE GERMAN ARMY INITIATED AN OPEN-MINDED EVALUATION"

► easily seen from the air. During attacks nearer the German lines, the bombs ended up as often as not on the German side. Most of the German divisions commented in their war diaries that the Luftwaffe's actions were of little help because the planes frequently hit their own troops.

**THE INVASION OF** 1939 was similar to earlier campaigns with horse-drawn artillery and foot soldiers carrying out most of the action, rather than a revolutionary campaign with new weapon types and tactics. The Polish army fought bravely, but failed to hang on when the Germans regrouped and attacked unexpectedly. The Polish soldiers lacked confidence in their officers, who led from the top and far from the front. By comparison, German leaders remained close to the front. This not only raised morale, but it also enabled them to quickly assess the changing situation on the battlefield and make well-informed decisions.

After the invasion, the Heer initiated an open-minded evaluation of the campaign. This review process was another factor that set the German commanders apart from their counterparts. Among other things, the assessment resulted in four light divisions being upgraded to panzer divisions after numerous commanders, including General Heinz Guderian, criticised the current structure. To further increase the concentration of mobile units, an all-panzer army was also created with seven panzer divisions distributed between three panzer corps.

**FALL WEISS (THE** Invasion of Poland) had been planned and executed according to traditional methods, but the invasion of France was a bold plan that intended to exploit the German army's tactical advantage in *Bewegungskrieg* – mobile warfare.

The strategy behind *Fall Gelb* – the Battle of France – was drafted by Lieutenant-General Erich von Manstein and meant that General Ewald von Kleist's Panzer Group would attack the enemy where they least expected it: in the Ardennes, whose forests and rugged landscape were considered to be impossible





The Germans surprised the French and British by attacking via the Ardennes in Belgium in 1940. Here, a Panzer III tank advances through the almost impenetrable landscape.

terrain for tanks. Once a route had been found through the dense woodlands, the rest of the German forces would break through the Allied defence in depth.

This proved to be a brilliant concept, but in the spring of 1940, the plan attracted a healthy degree of scepticism among the military. The two armed forces had roughly equal numbers, with a slight advantage on the Allied side. Von Manstein's plan was dismissed several times by the army's senior staff, and von Manstein himself – then chief of staff of Army Group A – was shipped off to the east to take command of 38th Army Corps. The plan eventually ended up on Hitler's desk, thanks to loyal members of von Manstein's staff, and the Führer issued orders for the Battle of France to go ahead using a modified version of von Manstein's plan (see map over the page).

**ON 10TH MAY, 1940,** the Germans attacked. The spearhead was formed by three panzer corps from the von Kleist Panzer Group. The units advanced through the Ardennes towards the Maas (*Meuse* in French) river without encountering any great resistance. The French commanders had decided

to concentrate their forces on the western side of the watercourse.

Lieutenant-General Georg-Hans Reinhardt of XXXXI Panzer Corps set out on 13th May, crossing through General Werner Kempf's 6th Panzer Division at Monthermé, managing to break through the French defensive line on 15th May. North of Reinhardt's Corps, the Germans achieved another breakthrough that day at Sedan thanks to the XIX Panzer Corps under the command of Heinz Guderian.

**THE OPERATION WAS** characterised by loud arguments between commanders that showed that the German organisational culture gave its leaders plenty of headroom and that the commanders were used to making decisions on the spot. The operation also benefited from solid air support, which focused on predetermined targets rather than attempting to cover the ground forces.

Opinion was divided on how the Luftwaffe could best be used during the river crossing. Guderian had been promised most of the air support and had, along ►



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**Erich von Manstein planned the attack through the Ardennes that launched the Battle of France.**



# BLITZKRIEG 1939–41

► with the tactical commander of Luftwaffe, Major General Bruno Loerzer, come to the conclusion that small squadrons of bombers should target French positions over a long period of time, thus putting constant pressure on the area. Von Kleist had a different opinion and had agreed with the head of the air force, Air Marshal Hugo Sperrle, that there would be a single and massive air raid that would knock out Allied fortifications. Loerzer decided to ignore Sperrle's order, later claiming he had only received it after the attack had begun.

The 1st Panzer Division quickly attacked the Sedan – reinforced by the Panzer-Grenadier-Division Großdeutschland and the 43rd Sturm Pionier battalion – and captured a bridgehead. The Guderian panzer corps's other divisions – the 2nd and 10th – also took bridges at a rapid rate, despite the fact that the 1st Panzer Division received the lion's share of artillery and air support.

**On 10th May, Germany made a diversionary move in the north against the Netherlands and Belgium. Two days later, it launched a massive, surprise attack through the Ardennes.**

**THE ATTACKS SHOW** the Germans' improvisational ability as company and battalion commanders quickly formed suitable attack formations from different units, which were adapted to the prevailing terrain and conditions. No senior commanders had pointed out the exact intersections, which gave the unit commanders the freedom to exploit the situation rather than relying on predetermined artillery or air support. France's



**This brave French crew took out 13 panzers with their Char B1 tank and withstood 140 hits from various armoured units. May 1940.**

advantage was lessened with each new situation, because the Germans' tactics enabled them to react more swiftly.

A day later, on 14th May, German engineers built a bridge at Sedan and nearly 600 tanks crossed the river. The Allied ground forces could not respond quickly enough to the rapid German advance, but instead attempted to bomb the German bridges from the air. The sorties were flown in daylight, and the result was disastrous for the Allies: almost half of the 150 bombers involved were shot down the same day.

**MODERN ANALYSIS OFTEN** suggests that the French situation, both locally and strategically, was already hopeless on 14th May, but that was not the case. The French were well positioned to mount counterattacks, and the Germans' successful river crossing was by no means a given. But the French failed to reorganise their forces for counteroffensives at the same rate as the Germans regrouped to launch further attacks. The Germans also had a bit of luck when France's 55th Infantry Division, which had been ordered to counter the German advance near Bulson, instead fled the area.

The French had been unnerved by a false rumour circulating that claimed German tanks had outflanked the division and were now behind the 55th. The result was "the panic of Bulson," in which parts of the division, including the artillery, abandoned their equipment and ran from the field. But luck is often a combination of skill and timing. If the French military chiefs had been closer to the front, like their German counterparts, they could easily have dispelled the rumours. Instead, they sat isolated, far behind their own lines and could neither understand the impact of the rumours, ►





**“THE ATTACKS SHOW  
THE GERMANS OFFICERS’  
IMPROVISATIONAL ABILITY”**

The Belgians blew up this bridge to try to stop German tanks, like this Panzer II, from crossing the Maas. May 1940.

ANIMAPAN PICTURES/PRINT COLLECTOR/GETTY



## BLITZKRIEG 1939–41

► nor exploit the situation to lead a decisive counterattack. Thus, the difference in leadership style and battlefield tactics proved decisive.

In the German command, the quarrels continued despite, or perhaps because of, the progress on the battlefield. The unsupported advance that left the vanguards bare-flanked and vulnerable, caused much head-shaking among the older German officers. Army Group A ordered Reinhardt's Corps to halt its advance across the river and instead form a reserve behind Guderian's Corps. This was because some German officers feared the worst if the tank units probed too deeply without proper support. This time it was von Kleist who ignored the order, albeit he was still complying with German tactics that emphasised the importance of exploiting a new situation rather than sticking rigidly to orders.

**FOR EACH SUCCESSFUL** initiative, a new situation arose. Reinhardt's XXXXI Panzer Corps had – contrary to orders – continued west after crossing the river at Monthermé. Then Guderian attacked west with two panzer divisions to exploit the weakness of the French front. For once, the

**Hundreds of thousands of British and French soldiers wait on the beach at Dunkirk in May 1940. In all, the Allies managed to evacuate more than 335,000 people.**



**Hitler supported the decision to stop at Dunkirk. To his left is General Günther von Kluge and Erwin Rommel. Photo taken during the campaign.**

headstrong commander told von Kleist about his plans in advance, but while his superior agreed with Guderian's proposed approach, he had been ordered to hold and wait for the infantry. Guderian reacted with fury until von Kleist relented and allowed him a few more days of independent control.

The German tank officers' approach proved to be correct. Within 48 hours, on 17th May, the 1st and 2nd Panzer Division were almost 120 kilometres





west of Sedan and less than 100 kilometres from the English Channel coast.

The situation was the same for all the Panzer Groups and Von Kleist could no longer ignore his orders and allow Guderian free rein. Von Kleist ordered his subordinate to report to him at an airport and demanded that he halt his advance as previously ordered. Guderian refused and demanded to be dismissed instead. Von Kleist granted his request, but Guderian was soon reinstated by the Commander of the 12th Army, General List. Ultimately, ego and jealousy played as much a part in the decisive events of May 1940 as German tactics.

**FINALLY, A COMPROMISE** was reached and the reinstated Guderian was ordered to scout westward. However, the general once again ignored his commanders, and instead gave orders to advance further, but to maintain radio silence so that his superiors wouldn't know where they were.

Two days later – on 20th May, just ten days after the campaign was initiated – Guderian's panzer corp reached the Channel coast, and France's fate was thus virtually sealed. The Netherlands had

## “IN FRANCE, THE DIFFERENCE IN LEADERSHIP STYLE... PROVED DECISIVE”

already surrendered and Belgium would capitulate one week later.

During the offensive, other commanders also ignored orders that they believed incompatible with the offensive's overall goals. Erwin Rommel, who later became one of Germany's best-known generals, had the command of the 7th Panzer Division, which the French nicknamed 'Ghost Division' because it appeared to pop up out of thin air where one least expected it.

**ON THE NIGHT** between 16th-17th May, Rommel defied a direct order and continued his attack, despite being told to hold. As a result, in a single night, Rommel's division drove a wedge, almost 40-kilometres long, into the French defences, ►



**Ewald von Kleist led the Panzer Corps that went through the Ardennes.**

BUNDESARCHIV, BILD 183/1986-0210-503/  
HARTMANN, FRIEDRICH, 87, 38A.50





- significantly improving the German position by the following morning.

The most decisive argument that broke out among the commanders was, of course, the one that occurred when the Germans reached the area around Dunkirk. Perhaps the most controversial decision of the entire war was taken by Field Marshal Gerd von Rundstedt on 22nd May, a decision that was confirmed by a direct order from Hitler on 23rd May. As a result, not even the high commanders dared to defy it.

Guderian, and others like him, were highly critical. They realised that time was precious if they were to prevent the British-French pocket from organising a defence and evacuating the Allied troops. However, the Germans now departed from their trusted tactic of devolved decision making, and the commanders at the front broke their own newly created tradition of constantly ignoring orders. As a result, the Allies were able to evacuate 335,000 French and British soldiers in a week.

**THE GERMANS INSTEAD** turned their gaze south. After six weeks of fighting, France requested a ceasefire. Despite the evacuation from Dunkirk, the Battle of France was a success for Germany. Now, only Great Britain and the Polish government in exile were left in the war against a Germany that dominated the entire European continent, with the tiny exception of Gibraltar.

The initiatives taken by German officers in the field enabled them to form a bridgehead at Maas, something that no-one had imagined in advance. Instead of waiting for the infantry, or simply carrying out their superiors' orders, German

## “THE COMMANDERS BROKE THEIR TRADITION OF CONSTANTLY IGNORING ORDERS”

officers, such as Guderian and Rommel, were confident enough to use their knowledge of the changing situation to drive the advance. French commanders faced with a similar situation had to wait for orders and, after a few days, watch golden opportunities slip away.

**ONE YEAR LATER**, in the summer of 1941, Nazi Germany stood at the height of its power. Czechoslovakia, Poland, Denmark, Norway, Luxembourg, Belgium, the Netherlands, France, Yugoslavia and Greece had fallen. Italy, Hungary, Romania and Bulgaria were allied with Germany, and Finland fought on the same side. Spain was neutral, but German-friendly. Hitler was ready for the last act – Operation Barbarossa – where the German army would use its ‘lightning war’ tactics to strike at the Soviet Union. The Germans expected it to be easy to defeat the Soviets’ armed forces and predicted a subsequent political collapse. As Hitler put it, “We have only to kick in the door and the whole rotten structure will come crashing down”.

Prior to Barbarossa, the Heer mobilised three million soldiers and 4,000 tanks. The Soviet Union ►

German soldiers man an anti-tank gun on the Eastern Front in the summer of 1941. On the left, an armoured car. These were used for reconnaissance missions.

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**Gerd von Rundstedt made the decision to stop at Dunkirk.**



ULLSTEIN/GETTY



# OPERATION BARBAROSSA

German mobile warfare reached its climax during Operation Barbarossa. The map shows the front line the day before the attack, 21st June, and on 5th December, when a Soviet counteroffensive stopped the Germans.



The first German tanks reach the Volga Canal, 32 km from Moscow's northern suburbs.





► was a vast country, and it was unrealistic for the Germans to assume that they could overcome and control such a large, thinly populated landscape. Therefore, the idea was to surround and destroy enemy units before they could retreat beyond the Germans' sphere of operations. It was an approach that perfectly suited the 'lightning war' tactics.

However, some minor problems existed: all the previous invasions had scattered the German armed forces. In addition, the Luftwaffe had to redistribute resources to the Mediterranean in the continuing war against Britain and Malta. The Germans would also soon discover how badly they had underestimated the strength of the Red Army, which greatly outnumbered German forces. For example, in the summer of 1941, the Soviet Union had over 23,000 tanks. Not all were in the western part of the country, but the Red Army still commanded a fierce arsenal.

**SUCH UNEQUAL NUMBERS** meant that Red Army losses would need to be proportionally much higher than German losses if Hitler's forces were to win. It was a simple matter of maths: if the enemy had a numerical advantage of 3:1, and you inflicted six times more damage, eventually you would win.

In order to achieve this, the Germans focused on the centre, along the Minsk-Smolensk-Moscow axis. The army was divided into three groups, with Army Group Centre being awarded the majority of the tank units. The number of panzer divisions had, by now, increased to 20.

The three German military campaigns from 1939–41, can be assessed in the following way: the Invasion of Poland was secured in the traditional German way, the Battle of France was won by responding quickly and exploiting unexpected

## "BARBAROSSA RELIED ON GERMAN MASTERY OF MOBILE WARFARE"

progress, and the start of Operation Barbarossa relied on German mastery of mobile warfare. Here, the Germans neither exploited emerging situations nor won in the traditional way. Instead, they worked to surround and destroy large Soviet units.

Germany began its attack on the Soviet Union on 22nd June, 1941. A few weeks later, German units were deep inside Soviet territory.

XXXXI Panzer Corp advanced 235 kilometres in four days, to take up a position east of Minsk. LVI Panzer Corps reached Dünaburg (now Daugavpils) following an advance almost 300 kilometres long during the first week and crossed the Dvina (now Daugava) river, while XXIV Panzer Corps advanced 442 kilometres in six days. Minsk was captured on 28th June and Smolensk on 16th July. In less than a month, the Germans, despite a lack of infrastructure, advanced two-thirds of the distance to Moscow while inflicting huge losses on the Red Army. In Belarus, more than 4,500 tanks were lost, and in the Ukraine nearly 4,000, while the loss in personnel exceeded one million.

**IN MID-AUGUST, THE** Germans were faced with another controversial choice: continue on to Moscow or swing south toward Kiev? Guderian argued for a gathering of strength with Moscow as the goal, while Hitler wanted to turn Army Group Centre south. Some historians argue that the Germans could have settled the war in 1941 if they had gone directly to Moscow. This doesn't seem likely, but from a 'blitzkrieg perspective' it is interesting that Hitler preferred to eliminate enemy units in the south, while Guderian would have attempted to end the war by occupying the Soviet capital, Moscow, which was primarily a political target.

Looking at the bigger picture, Hitler also had geostrategic goals: he wanted the Ukraine's fertile land, the Soviet industry in the Donbass region and, by extension, the oil fields in the Caucasus. But if the Germans had defeated the Red Army and taken over Soviet administrative affairs by capturing Moscow, Hitler could have satisfied those objectives anyway.

**AFTER A WEEK** of deliberations within the German High Command, Guderian

Heinz Guderian is saluted by a soldier on the Eastern Front in 1941. Guderian led 2nd Panzer Army during Operation Barbarossa.







ULLSTEIN/GETTY

had a personal meeting with the Führer on 23rd August, in which the panzer general unsuccessfully made his case. The same evening, Guderian gave orders to cancel the advance eastwards and instead turn south. This operation was in itself an organisational masterpiece: within 48 hours, Guderian's force had not only managed to change direction, but also attacked south at record speed. Linking up with parts of the 2nd Army, Guderian's new goal was to meet von Kleist's 1st Panzer Group east of Kiev and thus surround the Soviet forces.

The two panzer armies met early on 16th September, thus settling the fate of nearly one million Soviet soldiers who were now surrounded. By the end of September, Kiev was captured, and a complete section of the Soviet front collapsed. The Germans took over 650,000 Soviets as prisoners of war. This time, it was not only the Germans' rapid advance that led to victory. Stalin's order to stand and fight also contributed to the Soviets' defeat. The Red Army would have had enough time to retreat if it had acted in time.

**THE DETOUR SOUTH** meant that the offensive against Moscow was delayed until October. This time, the Germans broke through the Soviet's front. Unfortunately for the Germans, it mattered little

by this point. Soviet resources were so vast that its armed forces and industry were able to absorb the loss of five million soldiers and thousands of tanks without a problem. When the Germans halted outside Moscow in December 1941, ten new field armies were waiting for them.

**THUS, THE 'LIGHTNING** war' finally stalled. The Germans eventually recovered and made long advances during the summer offensive of 1942, but that was primarily because the Red Army had learned from its mistakes and now retreated whenever it was sensible to do so. When the Germans finally encountered stubborn opposition at Stalingrad, they became victims of their own tactics and were surrounded. In 1943, they fought bravely at Kursk, but broke all the principles they had learned by attacking where the Red Army was strong and prepared for attack. Local defensive victories still occurred, especially in the spring of 1943, and against the Allies in Normandy in 1944, but they couldn't turn the tide. In the end, the Allies' enormous numerical superiority proved decisive, but Germany's 'blitzkrieg' tactics helped them delay the inevitable by at least two years. ❖

**Mathias Forsberg** is a military historian.

**A common sight at the beginning of Germany's campaign against the Soviet Union: Red Army soldiers who have surrendered to fast-moving German soldiers. 26th June, 1941.**

**Further reading:**  
**Blitzkrieg 1939–1941: From the Ground Up** (2017) by Niklas Zetterling.  
★ **The Blitzkrieg Legend** (2013) by Karl-Heinz Frieser.

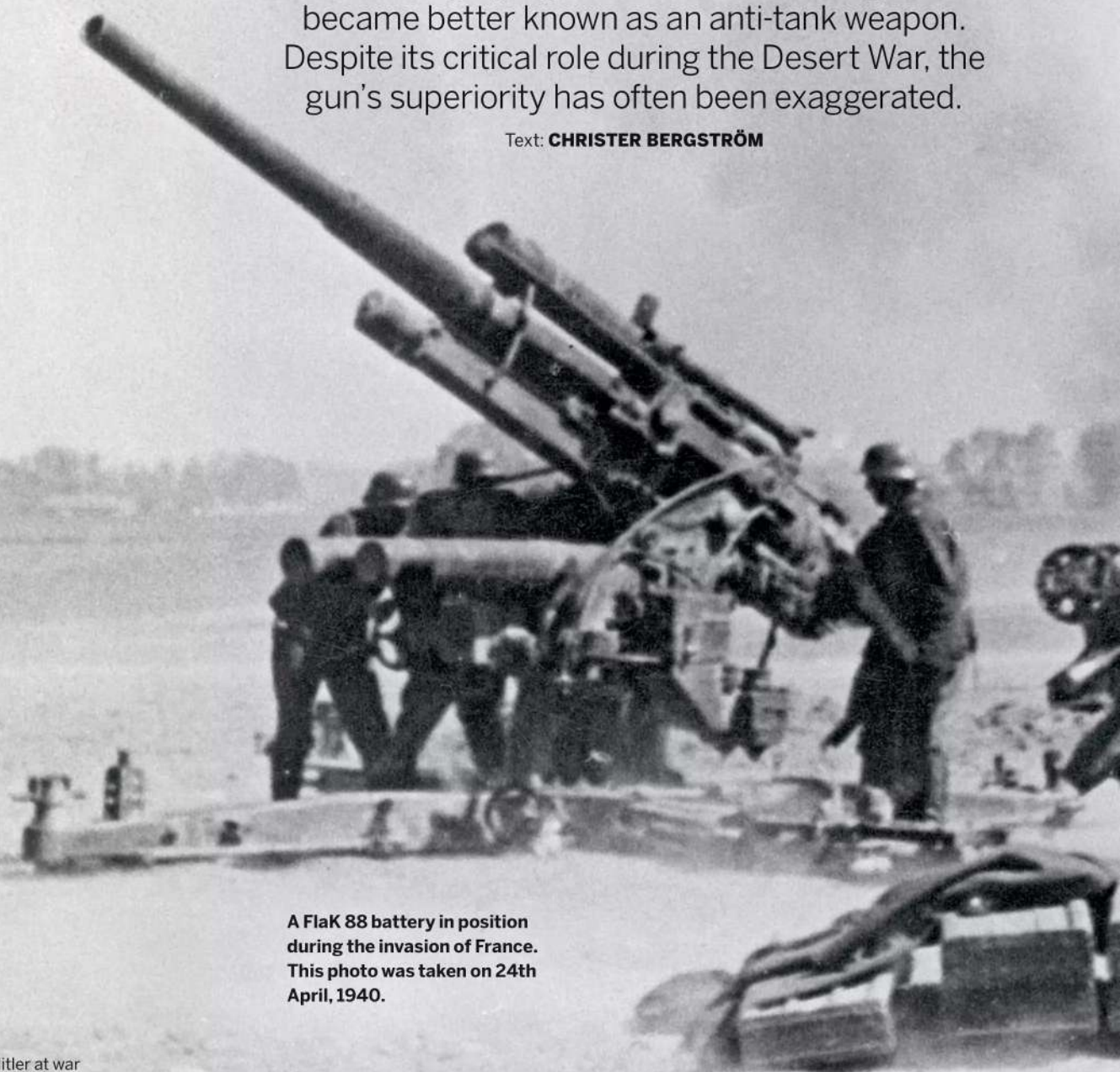


# 88-MM FLAK

## TERRORISED THE ALLIES

Few weapon systems were as legendary as the German 'Eighty-eight' – the anti-aircraft gun that became better known as an anti-tank weapon. Despite its critical role during the Desert War, the gun's superiority has often been exaggerated.

Text: **CHRISTER BERGSTRÖM**



A FlaK 88 battery in position during the invasion of France. This photo was taken on 24th April, 1940.





On Wednesday 27th May, 1942 Erwin Rommel, the Desert Fox, attacked the British Eighth Army in eastern Libya. Despite the British having a clear numerical advantage – they had 630 tanks versus 320 German and 240 Italian light tanks – Rommel chose to strike. He planned to bypass British defence positions and launch a surprise offensive from the south to strike directly at the port city of Tobruk. This 90-km sortie would advance north behind the strong British positions in the west.

The operation was typical of Rommel, being a mixture of genius and foolhardiness. He was taking the chance that his opponent, General Neil Ritchie, hadn't done what Rommel himself would have in his place – collected a strong armoured reserve force in the east. But here Rommel made a mistake. Thanks to Ultra, which decoded German radio messages, Ritchie knew his opponent's plans.

A few hours later, Rommel's strategy – and indeed the entire Afrika Korps – were in a state of disarray. Ritchie's Eighth Army had struck not



**An Eighty-eight is reloaded.**

only Rommel's supply lines, but also deployed a large number of US medium M3 Lee and Grant tanks, whose 75-mm guns were far superior to those of any tank in the Afrika Korps.

**THE GERMAN AND** Italian supply troops fled in panic when attacked by the powerful, British tank formations. Rommel found himself surrounded by a flood of retreating vehicles, with enemy tanks just a few kilometres away. At this moment, the Afrika Korps and its famous commander were perilously close to being captured and neutralised by Ritchie's tanks. Their escape was largely down to the actions of Colonel Alwin Wolz, commanding Flak Regiment 135.

In the chaos of fleeing vehicles, Wolz managed to stop half a dozen mobile 88-mm anti-aircraft guns, which he quickly put into position.

"Feuer frei!" ("Fire at will!"), Wolz shouted, and the 'Eighty-eights' (the Allies' nickname ▶

**"THE FIRST BRITISH TANKS WERE HIT FROM 1,500 METRES AWAY, AND CAUGHT FIRE, FORCING THE BRITISH TO PAUSE"**





## “THE GERMAN EIGHTY-EIGHT IS UNDOUBTEDLY THE MOST FAMOUS PIECE OF ARTILLERY FROM WORLD WAR II”

► for the guns) duly obliged. The first British tanks were hit from 1,500 metres away and caught fire, forcing the British to pause temporarily.

Now General Walter Nehring, one of Rommel's deputies, intervened. He ordered Wolz to form a “flak front” against the British tanks. Soon, 16 of the 88-mm anti-aircraft guns had been grouped in a U-shape, facing east.

The British armoured brigades again faced fierce fire when they attempted to resume their attack. By evening, two dozen columns of smoke marked the spots where the British tanks lay destroyed. Rommel's offensive – and the Afrika Korps itself – had been saved.

The anti-aircraft guns continued to keep the British at bay for several days before Rommel finally broke through and returned to his own lines in the west. Soon the Afrika Korps was ready to attack again.

On 21st June, 1942 Tobruk fell, and 30,000 Allied troops became prisoners of war. A month later, the Desert Fox's forces stood at El-Alamein. This would prove to be the high point of Rommel's military career and was based on the heavy anti-aircraft guns that had played such a crucial role in the fighting on the ground.

**THE GERMAN EIGHTY-EIGHT** is undoubtedly the most famous piece of artillery from World War II, and possibly throughout the history of war. It achieved great success in several roles – in air defence, against tanks and even as conventional artillery. It's precisely because of this success on

the battlefield that the 88-mm gun has become surrounded by so many myths and legends.

First, the use of the 88-mm FlaK gun against tanks – despite its origins as a gun exclusively for anti-aircraft use – is intimately linked to Erwin Rommel. But as we've seen, perhaps the Eighty-eight's most decisive intervention in the ground battles in North Africa wasn't due to Rommel's initiative, but to two of his subordinate officers. That said, Rommel used the 88-mm gun to good effect throughout the Desert War. During the British attacks in June and November 1941, for example, Eighty-eights played a crucial role in the fight against the Allied tanks.

**FOR MOST OF** the Desert War, British war reports confirmed that it was the heavy anti-aircraft guns that posed the greatest threat to British medium tanks. On one occasion, the British spotted a drawn-out column of 35 German tanks that could have been wiped out by a flank attack from a hidden British armoured force. But the British commander refused to attack when he discovered that the tanks “were supported by a battalion of 12 anti-aircraft guns”.

Although the British gave full credit to the famous 88-mm FlaK, the guns were just one part of the heavy anti-aircraft weapons adapted by the Axis for ground fighting in North Africa. For example, in May 1942 the Afrika Korps also used more than 117 captured Soviet 76.2-mm anti-tank guns, which like the 88-mm FlaK could knock out an M3 tank from 2,000 metres.

Rommel had already personally deployed 88-mm anti-aircraft guns during the blitzkrieg in Western Europe in May 1940, when his 7th Panzer Division became exposed to a British counterattack at Arras. Rommel discovered the British Matilda I tanks were impervious to his light tanks, so he ordered his division's air defences to intervene. Their 88-mm guns accounted for most of the 35



A German soldier paints a victory stripe on an Eighty-eight's gun barrel.

HEINRICH HOFFMANN/MONDOGRAPH PORTFOLIO VIA GETTY

## Armour penetration

The illustration reveals how much armour each version of the gun could penetrate from 2,000 metres distance at a 30-degree elevation.







British tanks destroyed and swung the battle back in favour of the Germans.

**ROMMEL WAS BY** no means the first to use the 88-mm FlaK gun on the battlefield. The German Condor Legion had already discovered how effective it was against both bunkers and tanks during the Spanish Civil War of 1936-39. A German general wrote a report that gave commanders such as Rommel the idea of using it against the more heavily armoured British and French tanks.

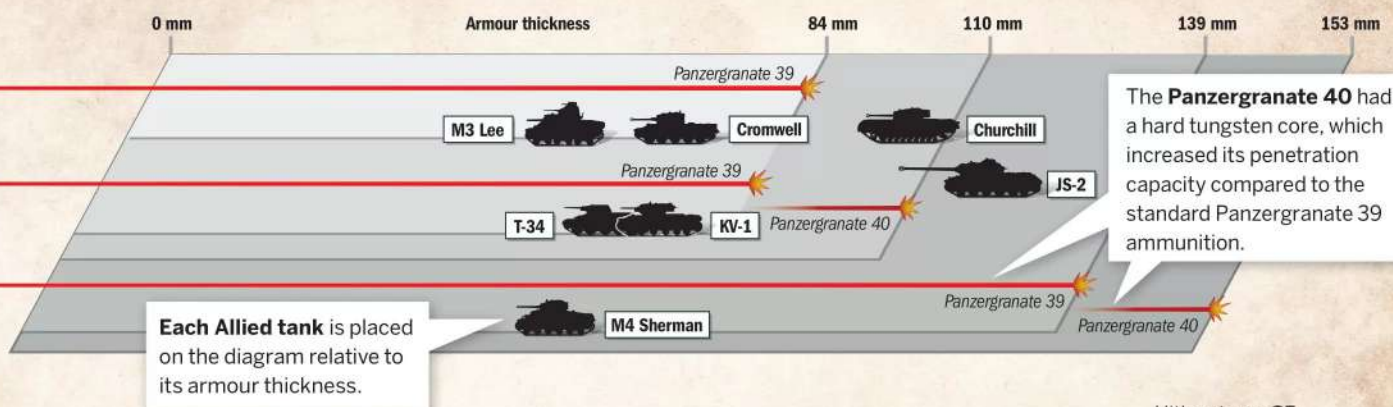
The original idea for using the Eighty-eight as a ground weapon came from Erhard Milch, who

served in the German artillery at the beginning of World War I. He was later transferred to the air force and took with him his observations of how German 75-mm anti-aircraft guns had destroyed the lion's share of tanks in Flanders. 20 years later, when Milch served as State Secretary in the Reich Ministry of Aviation, he directed the Luftwaffe's air defence unit to prepare for battles with tanks.

The perception of the 88-mm gun as a single artillery piece probably originated in Allied depictions of the war, but it's not entirely accurate. One legend cultivated with great enthusiasm among Swedes is that they constructed the first ►

**An 88-mm gun towed by the half-track SdKfz 7 on the Eastern Front in the summer of 1942. The gun could be fired without having to uncouple it.**

## for different versions of the 88-mm gun





## 88-MM FLAK

German soldiers open fire on tanks with a FlaK 88-mm anti-aircraft gun during a battle in the North African desert in 1942.

SÜDDEUTSCHE ZEITUNG / BILDBYRA



► 88-mm gun. The truth, however, is that German arms manufacturer Krupp sent a group of engineers to Swedish arms manufacturer Bofors AG to develop a new design for heavy anti-aircraft guns in the 1920s. This was a way of circumventing the restrictions placed on Germany by the Treaty of Versailles regarding the development of new artillery weapons. With help from both Bofors and the Swedish authorities, German and Swedish engineers developed a 75-mm calibre artillery gun. The German military wasn't satisfied, though – it wanted an 88-mm gun, which was standard in the German navy.

In 1928, the prototype was completed for the soon-to-be-famous Eighty-eight. It was based on the 88-mm L/45 *Flugzeugabwehrkanone* – aircraft-defence cannon, better known as the FlaK 16, which Krupp had developed during World War I. Five years later, after Hitler came to power, mass production on the new gun began at Krupp's factory in Essen. This gun was named FlaK 18.

**THE FLAK 18** was one of the first of a new generation of heavy anti-aircraft guns designed to combat enemy aircraft at the highest altitudes. Mounted on a cruciform gun carriage, it could also attack targets along a horizontal plane (like the previous FlaK 16). Thanks to its semi-automatic reloading system, the gun could fire around 20

shells per minute, which made it superior to similar weapons of the time.

A simple targeting mechanism was used on early FlaK 18 models that provided three values: distance and angle of elevation to the target, plus a setting to detonate the shell after a specific time in the air based on these previous values. The gunner's targeting mechanism displayed these in the form of three luminous rings – the gunner's job was to align all three circles over the target and then fire.

It was quickly apparent that the long 88-mm gun barrel tended to overheat thanks to its rapid rate of fire, so the gun was modified with a two-part interchangeable barrel, along with an armoured shield and new, more powerful gun carriage. The latter came equipped with legs that could be folded down to allow the gun to fire while still on its wheels and without its supporting outriggers.

These modifications entered production in 1936, and the new 88-mm guns were designated FlaK 36. They were virtually identical to the FlaK 18 – the only difference being that the guns with the larger cruciform gun carriage (*Sonderanhänger 202*) were called FlaK 36, while those mounted on the smaller *Sonderanhänger 201* cruciform carriage were FlaK 18s.

**FROM THE 1930S** and throughout World War II, the Eighty-eight remained the most important heavy



air artillery piece in the Luftwaffe's air defences. In September 1939, Eighty-eights accounted for around 2,500 of its 2,618 heavy guns. By this time, the Germans were producing the FlaK 37, which had an improved sight. In all other respects, however, it was the same gun.

The German 88-mm FlaK 18/36/37 didn't only play a crucial role in the ground battles in France (1940) and North Africa (1941-43), but also on the Eastern Front. When Hitler invaded the Soviet Union in June 1941, German forces met heavily armoured Soviet T-34 and KV tanks that their own tanks and anti-tank guns couldn't counter except at extremely close range. During some of the initial clashes with these armoured monsters, it was the Eighty-eights that came to the Germans' aid.

But here too many myths exist around the 88-mm gun. Information from Soviet archives suggests that no more than 10 per cent of all T-34 losses in 1941-42 were at the hands of the Eighty-eights. Most losses were down to poorly trained Soviet tank crews who failed to fully exploit the tactical benefits of their tanks' superior armour; instead they strayed into positions where lighter German armoured guns could take them out at close range.

**DURING THIS TIME**, remodelled 88-mm guns were developed. The first of these, equipped with a gun barrel 158 cm longer than the previous model, was produced by Rheinmetall and was designated FlaK 41/L74. The L74 label referred to the fact that the barrel length was 74 times longer than its calibre ( $74 \times 88 \text{ mm} = 6,512 \text{ mm}$ , or 6.51 metres). This gun – used for the first time during the fighting in Tunisia in early 1943 – meant that the Germans could strafe enemy aircraft at up to 12,000 metres altitude. The gun was also capable of penetrating 127-mm armour from 2,000 metres – earlier 88-mm guns could only do this from around 1,200 metres.

## **“IN REALITY, GERMANY’S ENEMIES DEVELOPED GUNS THAT WERE EQUALLY GOOD – AND IN SOME CASES EVEN BETTER”**

However, the gun's complex construction led to a limited production run of just over 400 units during 1943-44.

Meanwhile, Krupp also produced another 88-mm gun, the *Panzerabwehrkanone 43* – anti-tank gun 43, or PaK 43. It was the first 'real' 88-mm anti-tank gun. This L71 gun first saw action – mounted on armoured gun carriages – during the Battle of Kursk on the Eastern Front in July 1943. The PaK 43 could penetrate 153 mm of armour from up to 2,000 metres when firing at a 30-degree vertical angle, allowing it to knock out even the most heavily armoured enemy tanks from distance. During the war, Germany produced a total of 3,500 PaK 43s, either mounted on wheeled carriages or on armoured vehicles.

**ANOTHER 88-MM GUN** frequently used was the *Kampfwagenkanone* – fighting vehicle cannon, or KwK 36 tank gun. This had the same length barrel as the FlaK 36 and used the same explosive shells, but it was equipped with an electric firing mechanism. This gun was primarily designed for mounting on ►

**German soldiers rush to their Eighty-eight after being alerted to an imminent air raid in 1944.**





## 88-MM FLAK



The elite Großdeutschland Division with its combat-ready Tiger tanks and 88-mm KwK 36 guns. Picture taken at Jassy in north-east Romania in the summer of 1944.

- the new Tiger I tank chassis. The Tiger went into battle for the first time on the Eastern Front at the end of 1942 and its arrival meant the Germans now had a tank that outclassed all enemy tanks. The new machine combined extremely powerful armour with the firepower of the dreaded Eighty-eights.

The Germans organised their Tiger tanks into heavy Panzer battalions. One of these, *Schwere Panzer-Abteilung 503* – 503rd Heavy Panzer Battalion, reportedly knocked out 389 Soviet tanks and assault guns, plus 265 anti-tank guns from 5th July to 17th August, 1943 – all for the loss of just a dozen tanks.

The Germans built a modified version of the PaK 43 – the KwK 43 – for the Tiger II, *Königstiger*, deployed in Normandy in July 1944. They equipped the KwK 43 with the same type of muzzle brake as the latest PaK 43s, making it significantly different to the first FlaK 18.

**ONE WAFEN-SS TIGER** II battalion fought admirably during the Battle of the Bulge in December 1944, but in general, the level of training for the new tank crews wasn't sufficient for the task at hand. Several Tiger IIs broke down along the advance roads, some were knocked out when they encountered more agile US Sherman tank units, and

### Won with his Tiger

★ The German Panzer VI (Tiger I) tank was equipped with an 88-mm gun (KwK 36), which gave it superiority on the battlefield. One of the best-known examples of this was at the Battle of Villers-Bocage in Normandy on 13th June, 1944 where SS Captain Michael Wittmann knocked out an entire column of around a dozen British tanks with just one Tiger. A few days later, 88 mm anti-aircraft and PaK 43 anti-tank guns played a significant role as they resisted Operation Goodwood – the British attempt to force a breakthrough in Normandy. This cost the British around 300 tanks.

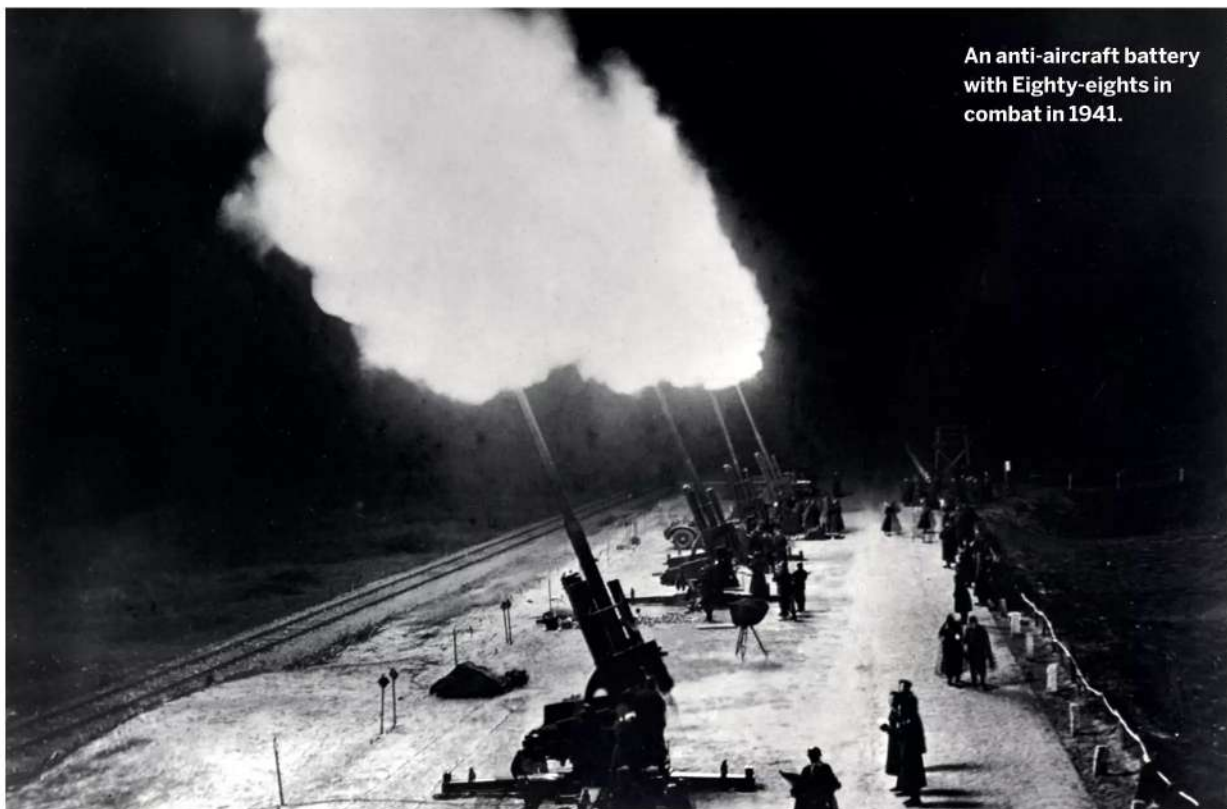
WWII's most successful tank commander, Feldwebel Kurt Knispel, won the majority of his 168 victories in a Tiger. Knispel finally fell on 29th April, 1945, when a Soviet T-34 destroyed his Tiger II.



others had to be abandoned due to fuel shortages.

But when the Americans attacked German posts outside Bastogne on 3rd January, 1945, they were met by two Tiger IIs from the 503rd Heavy Panzer Battalion. These took out between 15 and 20 Sherman tanks and repelled the entire US attack without loss. The Tiger II was superior to





An anti-aircraft battery with Eighty-eights in combat in 1941.

any Allied tank, but it's a myth that the German Eighty-eights similarly outclassed all the anti-aircraft and anti-tank guns on the opposing side. In reality, Germany's enemies developed guns that were equally good – and in some cases even better – than the German Eighty-eights: the British 17-pounder, the US 90-mm M1/M2 and the Soviet 85-mm M1939, for example.

What was revolutionary about the FlaK 18/36/37 was the German method of deploying it on a large scale in ground combat. During the Battle of the Bulge in the winter of 1944–45, it was also widely used as a regular artillery weapon and accounted for a large proportion of US losses in the bloody winter battle.

Old 88-mm guns contributed decisively to slow down Patton's offensive in the Ardennes, allowing the German 5th Panzer Army to retreat without being cut off. The final major winter battle of the war thus helped further increase the Eighty-eight's fearsome reputation. Most US veterans who fought in the Ardennes spoke in awe of the Germans' feared 88-mm guns.

The efforts of the FlaK 88-mm guns in the battles on the ground made such a strong impression on the Allies that their original use – as anti-aircraft guns – has often been overlooked. By the end of the war,

Germany had produced 26,000 heavy anti-aircraft guns – namely, guns with a range of over 5,000 metres altitude, which was where the Allied heavy bombers operated. FlaK 18/36/37 guns accounted for 80 per cent of these.

**ALMOST HALF OF** all US four-engine bombers shot down in Europe during World War II fell victim to anti-aircraft fire. Most of these were shot down by 88-mm guns. A further 26,000 such bombers were damaged by air defences between August 1942 and June 1944, many of which became easy prey for German fighters. On top of directly damaging enemy aircraft, German air defences also prevented some Allied bombers from accurately dropping their payloads.

All in all, the various German 88-mm guns were some of the most effective weapons in World War II. This was – of course – partly down to the weapon's inherent capabilities, but its strengths were reinforced by the creative way the Germans used their anti-aircraft guns. And it's this creativity that forms the basis of the legends fashioned around the famous Eighty-eights. 🇩🇪

**Christer Bergström** has written several books about World War II.

**Further reading:**  
**88 mm Classic Weapons – The FlaK/PaK 8.8cm** (1998) by Chris Ellis  
**★ 88 mm FlaK 18/36/37/41 and PaK 43 1936–45** (2002) by John Norris.



# STAHLHELM

## Evolution of the iconic helmet

In World War I, the steel helmet replaced the German spiked helmet, the *pickelhaube*. The new helmet was designed to protect soldiers from shrapnel, but it came to symbolise the Nazis and German militarism.

Text: **RASMUS KJÆRBYE PETERSEN**



German soldiers wearing model M35 steel helmets march in Paris after capturing the city in June 1940.



**A**s firearms began to appear on the battlefields of Europe between 1400-1600, so helmets were gradually abandoned by soldiers as a form of protective headgear. Their time seemed to have passed and few at that time could have expected them ever to return.

Like other warring powers, Germany began World War I without a helmet. The classic, painted-leather hood was purely decorative and provided no protection. Even with modern steel, it was not possible to make a helmet that could stop a bullet. Any helmet that could have done so would have been too heavy to be used in the field.

**THE FIRST ATTEMPT** to produce protective headgear for the German forces was a local initiative that did not aim to stop rifle fire. Armee-Abteilung Gaede was a corps-sized unit serving under Hans ▶

A German stormtrooper with an early steel helmet. Photo taken on the Western Front during World War I.

SEMA/JOE GETTY

**“THE FIRST NEW GERMAN HELMET WAS AN EXPERIMENTAL PROTOTYPE”**





# STAHLHELM



The classic pickelhaube.

► Gaede's command in Alsace-Lorraine in 1915. He commissioned his artillery workshops to develop a bent steel disc with a protruding nose guard that could be buckled onto a leather hat. It was nicknamed the Gaede helmet and was an improvised solution to the problem of soldiers getting hit in the head by shrapnel while in the trenches.

**THE SOLDIERS OF** Armee-Abteilung Gaede were, of course, not the only ones wearing a helmet. At about the same time, August Bier, a professor of medicine at the University of Berlin, was stationed as a doctor in Belgium and France. He claimed that 80 percent of the serious head injuries he treated were due to splinters from artillery shells, not bullets from guns. Therefore, he suggested using a steel helmet that could protect against shrapnel.

Engineer Friedrich Schwerdt at the Technical Institute in Hanover was commissioned to make August Bier's idea a reality. The result was one of military history's most famous and distinctive forms: a high dome with protruding peak at the front to protect the face from above and a sloping brim covering the neck and sides of the head.

Weighing in at 1.2 kilogrammes, the German steel helmet (Stahlhelm) was heavier than the helmets developed by French and British during the same period, but it also provided better protection. This wasn't only because it covered a larger part of the head and because the sloping brim made it more effective against ballistics, but also because the steel alloy was stronger – although this also made it both expensive and difficult to produce.

**THE TROOPS SOON** learned to appreciate the helmet. One of them, Lieutenant Walter Schulze, wrote this at the Somme in July 1916.

*"Suddenly, I was hit with a fierce force in the forehead and thrown to the ground in the trench ... my helmet was hit by shrapnel, but it had not penetrated the helmet, just made a bulge in it. If I had been wearing*



Heavily equipped German soldiers with Gaede helmets and gas masks during World War I.

*my hat, which was the norm just a few days ago, the regiment would have had another dead man now."*

To the consternation of surgeons in the field, the introduction of the steel helmet led to more patients with head injuries. Many soldiers who would previously have died on the spot when they were hit, now survived long enough to reach the operating table.

**THE FIRST VERSION** of the German steel helmet was the Model 1916 (also called M1916 or just M16). It differs from later models from World War II, partly because of its size (not only is the helmet itself larger – the brim is also larger compared to the rest of the helmet), and partly because of the two characteristic 'horns' on the side of the helmet.

The horns were two hollow bolts that both acted as air vents and as attachment points for a steel brow plate – *Stirnschilde*. A further development of the Gaede helmet, the brow plate was a piece of heavy steel that could be fastened to the front of the helmet to make it bulletproof. But the brow plate was so



The Gaede helmet was a steel disc that was strapped to a leather hat.



The brow plate was attached to the 'horns' and made the M16 bullet-proof from the front.

## Camouflage up to the individual

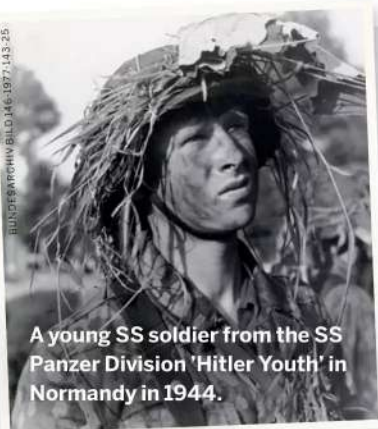
★ In 1918, the German army issued directives about painting camouflage patterns on helmets, but there were no similar instructions in World War II. The German army experimented with camouflage patterns in the 1930s, including on helmet covers, but it was generally considered too slow to use camouflage in the



A camouflaged version of the M16 steel helmet.

field, although some smaller special units such as paratroopers and the SS used camouflage to a greater extent.

The use of camouflage was up to the individual soldier or the unit's officers, and the results varied quite a bit, depending on their ability and the materials they had available.



A young SS soldier from the SS Panzer Division 'Hitler Youth' in Normandy in 1944.





German soldiers with M16 and M17 helmets in a trench on the Western Front in 1917. The soldier in the middle has a 'cavalry helmet' with cut out ears.

SP PHOTO/IBL

heavy that most German soldiers preferred to do without. The M1916 was followed up by the M1917, which with the exception of the liner system looked much like the previous model. The standard version of the M1918 only offered a minor change in the way the chin strap was attached.

**GERMAN SOLDIERS WERE** not entirely enthusiastic about the design of their steel helmets. The wide brim covered the whole ear and thus made it difficult to hear orders or enemies slipping across no-man's land. A variant of M1918 was therefore produced, where two large ear holes were cut into the brim. This significantly changed the appearance of the helmet. This type of helmet was often called a 'cavalry helmet' because it was popular with German cavalry. But the fact is that it was used by all German soldiers who needed to hear better. The helmet was not limited to any particular military unit, but it was never widely distributed.

After World War I, 64,000 helmets of types M1916–18 were destroyed in accordance with

## **“THE BROW PLATE WAS SO HEAVY THAT MOST GERMAN SOLDIERS PREFERRED TO DO WITHOUT”**

the conditions of the Treaty of Versailles. But the Germans had produced seven million copies of the M1916, and the steel helmet was still quite common in Germany. Many soldiers brought their helmets home and used them in the private free corps formed during the political chaos after the war.

The steel helmet eventually became a symbol of the paramilitary groups (one of the organisations even took the name *Stahlhelm*). Although it had been developed for practical reasons, the helmet became a symbol of German militarism, both for the Germans themselves and for their enemies, in much the same way as the *pickelhaube* had previously.

With such surplus stocks, it was no problem to cover the Reichswehr's modest needs over the next ten years. It wasn't until the early 1930s ►



# From the Western Front to East Germany



**M16.** Made in 1916. The 'horns' are air vents and used to fix the brow plate.



**M17 AND M18**  
These two had minor adjustments to the inner lining system.



**'CAVALRY HELMET'**  
A variant of the M18. Openings at the ears make it easier to hear.



**M33.** This helmet is made using a light, hard-plastic material, vulcanised fibre.



**M35.** Steel is back, but the helmet is smaller and lighter than earlier steel models.

**Free Corps  
Brigade  
Erhardt in steel  
helmets during  
the Kapp  
Putsch coup  
intended to  
overthrow the  
new Weimar  
Republic in  
1920.**

► that the military considered replacing the World War I helmet.

The first new German helmet was an experimental prototype. It became known as M1933, and work started on it in 1932. The idea was to develop a very lightweight model, abandoning steel in favour of a heavy plastic-type material known as vulcanised fibre. Field trials in early 1933 were considered successful, and a tiny number of M1933 were produced and distributed to different Reichswehr units.

Despite the prototype's success, the army returned to steel for its next helmet: the M1935.

Professor Schwerd new design was similar to the M1916, but was both lighter and more compact than its predecessor. The brim was smaller, so it didn't cover the ears in the same way.

The M1916 was produced by heating a molybdenum steel plate and pressing it into a mold. The process took place in several stages with repeated heating and pressing to prevent the steel from becoming overloaded and fracturing. When the final shape had been formed, the helmet was cut out of the plate. The edge was then folded inwards, giving the helmet a smooth edge all the way around. Like the



BUNDESARCHIV BILD 146-1971-091-20





**M40.** Instead of a hollow bolt, a ventilation channel is drilled.



**M42.** Mass production stamps out poorer helmets, but with the same dimensions.



**M44.** Offered better protection, but Hitler rejected it for being too 'foreign'.



**M54.** Reworked version of the M44 helmet for the East German police force.



**M56.** The East German army, *Volksarmee*, uses an almost identical version of the M44.

## “THE BIG HELMET MANUFACTURERS PETITIONED TO GET RID OF THE HOLLOW BOLTS”

M1916, the M1935 also had small air vents, but its hollow bolts didn't protrude from the surface of the helmet, unlike the 'horns' of its predecessor. The liner system and chin strap were developed from those that had featured on the M1916-18 and the helmets of the interwar years.

**AS SOON AS** the M1935 entered production, the big helmet manufacturers petitioned to get rid of the hollow bolts. In 1938, Eisenhüttenwerke in Thale suggested that they be replaced with drilled ventilation ducts with raised edges. Part of the reason was to simplify production, part because the company feared the bolt would become loose



Soldiers from the Reichswehr greet Hitler wearing M33s. The helmets are made of hardened plastic.

and be thrown like a projectile if the helmet was hit. The army finally agreed to the proposal in 1940.

A significantly more dramatic redesign took place in 1942. Hitler's dream of a quick victory had vanished and the need for mass produced materiel began to overshadow all other considerations. The M1942 was designed to be easy and fast to make. The time-consuming multi-step design was ▶

## Hitler replaced the coat of arms

★ During the interwar period, the *Reichswehr* (Germany's military organisation) painted various coats of arms on the helmets, which showed to which German state the soldier belonged. This ended in 1933–34. The Nazi unification of the German state led to a downplaying of citizens' regional affiliations.

Thereafter, all German helmets were equipped with two coats of arms. The shield on the right had a

tricolour with the national colours (black, red and white) while the shield on the left showed an eagle with a swastika in its claws (the colour and design showed whether the soldier belonged to the army, navy or air force).

In March 1940, the army was ordered to remove the coat of arms, but many units failed to follow the order, and, in some cases, it was not until 1943 that the crests were finally removed.



Army



Navy



Air Force



The tricolour was on the right side of the helmet.







East German soldiers in the M56 helmet, the design Hitler rejected.

► abandoned. Instead, the helmets were punched out in four steps with a heated piston that left stress marks in the steel on some helmets. To save time, manufacturers also stopped rolling the edges. As a result, the M1942 is readily identified by its narrow, drawn edge.

In 1942, the Germans also began to develop a new helmet, one that both provided better protection and was easier to produce. The designers tested German and Allied helmets and discovered that

**“THE MORE VERTICAL THE STEEL, THE EASIER IT WAS FOR THE SHRAPNEL TO PENETRATE”**

none provided uniform protection over their entire surface. The more vertical the steel, the easier it was for the shrapnel to penetrate. Informed by these findings, the designers created a new model,

## Many armies used steel helmets

★ During World War I Germany exported helmets to its allies. Austria-Hungary made its own version of the M1916. A few M1918s without brims at the front were made for the Ottoman Empire, so that Muslim soldiers could touch their foreheads to the ground to pray without removing their helmets.

After the war, Poland seized large quantities of M1918s,

which were either exported or used by the Polish army.

The Germans sold the M1935 to other countries, primarily to the Nationalist regime in China, but also to South America and Franco's Nationalists during the Spanish Civil War.

During World War II, Germany again provided its allies with helmets, while the Hungarians once again produced their own



Chilean honour guard in his steel helmet in 2009.

variant of the German model, in this case the M1935.

The M1935 was also found in the Polish reserve forces – helmets taken from dead Germans were a symbol of their opposition to the Nazis.

After World War II, the M1935 was most commonly found in South American countries. A variant of it was produced in Argentina.





Here you see how the M35 was made. The process took a long time and was simplified when mass production began in 1942.

which some called the M1944. It had a uniform, sloping shape. The helmet was rejected, though – reportedly by Hitler himself, mainly because he thought it looked ‘foreign’. He believed it would destroy the German soldier’s distinctive profile.

The M1944 was never more than a prototype, but some Russian reports from the front during the Battle of Berlin indicate that the models were actually used in the last, chaotic phase of the war.

When East and West Germany rearmed in 1955, neither the Western powers nor the Soviet Union attempted to reintroduce the classic steel helmet. It was too closely associated with German militarism and Nazism. Instead, the West German Army introduced a new helmet based on the US design.

**THE COMPANIES THAT** worked on the M1944 prototype lay in what later became East Germany. A very limited reworking of the helmet resulted in the M1954, often called the Vopo (short for *Volkspolizei*) helmet because it was produced for the East German national police force. An almost identical version, the M1956, was used by the East German Army that was formed in the same year.

This distinctive helmet is today strongly associated with East Germany, despite the fact that it was actually developed in Nazi Germany. Thanks to its ballistic-deflecting form, it was one of the most effective helmets before the introduction of Kevlar helmets in the 1980s. It was also the last German steel helmet.

Many modern Kevlar helmets have a shape reminiscent of the M1916–35 helmets. In the media, the US Army’s modern Kevlar headgear has even been referred to at times as the ‘Fritz helmet’, presumably as a recognition of the quality of the design, rather than the modern associations connected with the iconic shape. 🇩🇪

**Rasmus Kjørbye Petersen** is a military historian and writer.

Further reading: **Wehrmacht Combat Helmets 1933–45** (2004) by Brian C Bell.

## Paratroopers received their own helmet

★ When the Luftwaffe formed the paratrooper regiments in 1936, it was decided that they should have their own helmet. Some believe the reason for the redesign was because paratrooper commanders worried that the brim of the M1935 would cause turbulence during a jump or perhaps catch on and damage the parachute’s fabric.

It’s more likely that the head of the Luftwaffe, Hermann Göring, simply wanted his own helmet – such were the petty power struggles that dogged the Nazi leadership. After the war, German paratrooper veterans commented that jumping with a standard M1935 would not have been a problem and that it would have given them greater protection on the ground.

Nonetheless, a parachute helmet with the designation M1936 was developed, which was basically a modified M1935 with a smaller brim. The helmet had a chin strap that had Y-shaped parts at each end that were attached to the inside of the helmet



**Paratrooper helmets had almost no brim.**

with four carabiner hooks for additional security.

The M1936 also had four oblong holes in its narrow brim where the carabiner hooks could be attached when the wearer wasn’t parachuting.

The next version, the M1937, had just two holes, while the final version, the M1938, had no holes at all, but by then the designers had abandoned carabiner hooks altogether.

Otherwise, the three different versions of the paratrooper helmet were pretty much the same.



**Paratroopers with their distinctive helmets. This picture was taken during the fighting in Normandy in 1944.**



The 1919 Treaty of Versailles prohibited Germany from building heavy battleships. Hitler's response was the relatively small, but heavily armoured 'pocket battleship'. Discover how **Admiral Graf Spee** spread terror throughout the South Atlantic and was hunted across oceans in the autumn of 1939.

Main text: **LARS ERICSON WOLKE**

Additional text: **RICHARD ARESCHOUG**

# HUNT FOR THE DREADED GRAF SPEE

**T**alk about World War II at sea, and most people associate it with the ruthless submarine war in the North Atlantic, the pursuit of the gigantic German battleships *Bismarck* and *Tirpitz*, or the great sea battles in the Pacific. But in fact the naval component of WWII

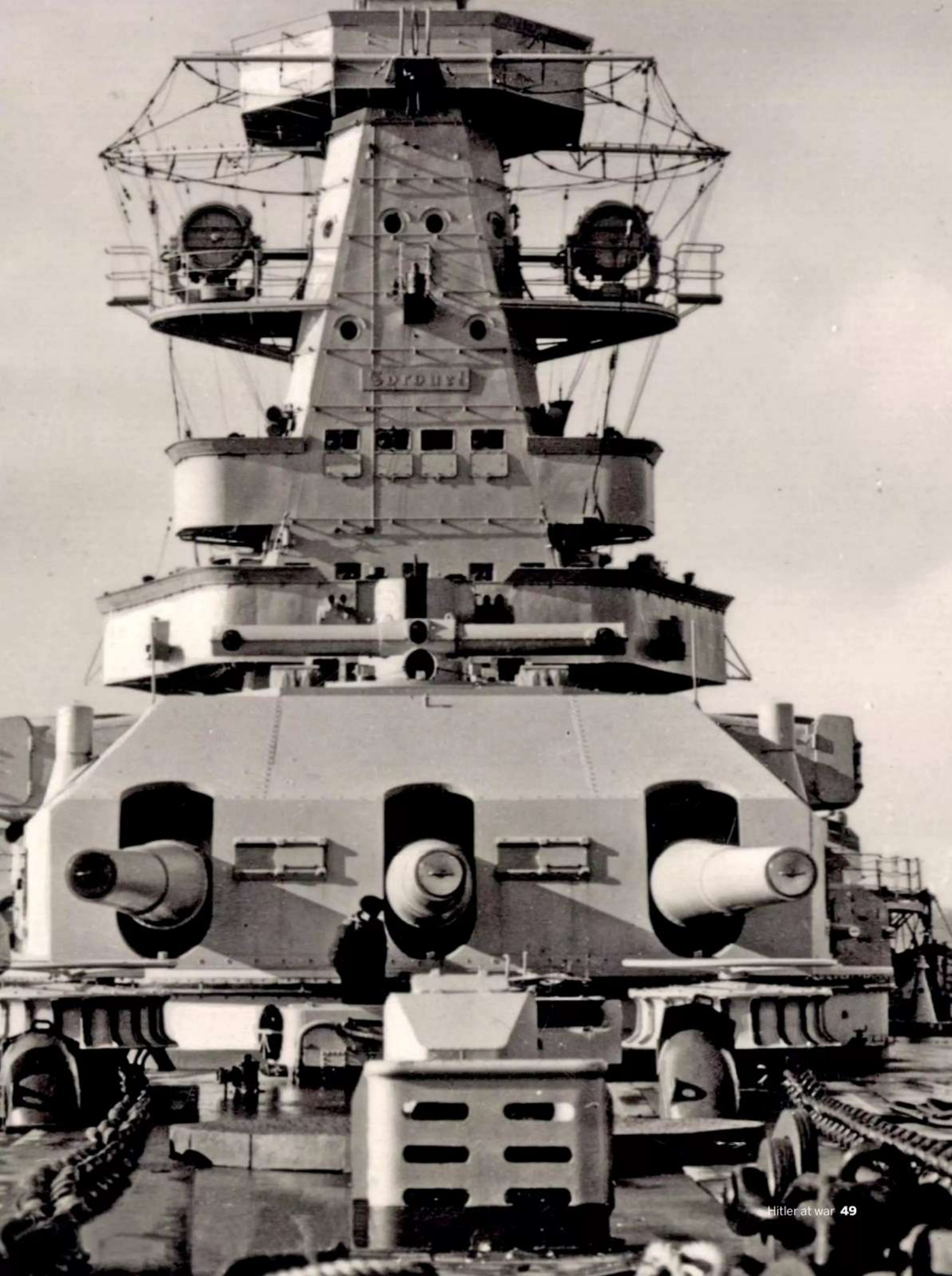
actually started far away from European and North American waters.

From the outbreak of war in September 1939 to the beginning of May 1940, the British, French and German armies stood off each other along the Franco-German border without any real battles breaking out. The so-called 'Phoney War' would finally end with ►

*Graf Spee* with her 28-cm (280-mm) guns posed a serious threat to Allied shipping. The picture is probably from 1937.

**"GERMAN BATTLESHIPS  
AND CRUISERS WERE ALSO  
INFLECTING HUGE LOSSES"**







# GRAF SPEE

- the massive German blitzkrieg in Western Europe, which began on 10th May, 1940. Within just six weeks France would fall and the British Army would require evacuation from Dunkirk. But this was still a far-off event in the autumn of 1939.

At the beginning of October, Poland succumbed to invasion from German and Soviet armies, and the weapons temporarily fell silent in Eastern Europe too.

If a watchful stalemate marked the land war, it was the opposite of what was occurring at sea. Thousands fought and died in the North Atlantic and the North Sea. The German submarine war against British shipping was already underway, and by the end of 1939, 114 Allied merchant ships had been sunk, 37 in the North Atlantic and the North Sea. Only one German U-boat was torpedoed, while mines or depth charges struck another eight. In addition, at least 33 Allied ships sunk after sailing into German minefields.

**AT THE BEGINNING** of the war, it wasn't merely the dreaded U-boats that posed a great danger to Allied shipping. German battleships and cruisers were also inflicting huge losses on Allied merchant ships. These German ships were therefore often pursued by Allied naval forces attempting to sink them before they reached the large convoys to spread death and destruction among the merchant vessels.

One of these German warships was the pocket battleship *Admiral Graf Spee*. She was already heading south when France and the United Kingdom declared war on Germany on 3rd September, 1939 and soon reached her intended operating area in the South Atlantic.

The supply ship *Altmark* accompanied *Graf Spee*. Onboard the battleship, commander *Kapitän zur See* – Captain at sea Hans Langsdorff, did everything to

## “THOUSANDS FOUGHT AND DIED IN THE NORTH ATLANTIC AND THE NORTH SEA”



**Graf Spee was named after Admiral Maximilian von Spee, who triumphed at the naval Battle of Coronel but fell in the Battle of the Falkland Islands in 1914.**

confuse British and French reconnaissance aircraft. He painted over the ship's name and replaced it with *Admiral Scheer*, one of *Graf Spee*'s sister ships. Langsdorff also placed fake gun turrets on the front of the lower bridge to change the ship's silhouette. Another misleading tactic was to switch between showing British and French flags.

**GRAF SPEE'S FIRST** victim was the British cargo ship *SS Clement*, which was sunk outside Pernambuco in north-eastern Brazil on 30th September, 1939. When *Clement*'s crew was picked up by another vessel, they recounted that *Admiral Scheer* had attacked the ship. Now the hunt began. A lone and powerful German ship rampaging in the South Atlantic could cause untold damage to Allied maritime traffic. Royal Navy command set up four hunting groups in the central Atlantic to track down the ship. They comprised an aircraft carrier, two battleships and two cruisers from the Royal Navy, as well as an additional aircraft carrier and five cruisers from the French fleet. In addition, three further hunting groups were formed in the South Atlantic, each with one aircraft carrier, one battleship and a combination of six heavy and light cruisers.

As if that were not enough, an aircraft carrier and two cruisers were tasked with secretly patrolling the southern part of the Indian Ocean. As well as these ships, the aircraft carrier *HMS Glorious* and the battleship *HMS Malaya* were ordered to the area as additional reinforcements along with several destroyers. Vast oceans required searching, and it was critical the forces had superior firepower if they were to disable the German ship. But the British and French efforts also demonstrated that *Graf Spee* had already succeeded in one of her tasks: to attract large groups of pursuers that significantly weakened Allied naval forces around the British coastline and the Mediterranean.

**BRITISH ATTEMPTS TO** locate *Graf Spee*'s position were initially futile, but on 10th October, 1939 a ship bearing the French flag approached the British cargo ship *SS Huntsman*. Her commander, Captain AH Brown, believed he recognised the French battleship *Dunkerque*, but this proved a fatal error. German sailors boarded *Huntsman* and seized important information about trade routes ►



**Adolf Hitler inspects the crew and the 'pocket battleship' Admiral Graf Spee. The picture is undated.**





STONE-FRANCE/ALAMY

**Admiral Graf Spee** launched at a solemn ceremony in Wilhelmshaven, a few miles north of Bremen, on 30th June, 1934. The ship was finally completed in January 1936.

## Germans defied peace treaty

★ *Admiral Graf Spee* entered service on 6th January, 1936, one of three cruisers in the so-called Deutschland class. The ship's class had been laid on the drawing board in 1920 and was a consequence of the Treaty of Versailles' restrictions on new German rearmament. The peace agreement stipulated the German fleet could only retain eight old, outdated battleships that could only be replaced with new models after 20 years operating lifetime.

At the same time, each replacement could only displace a maximum of 10,000 tonnes.

It forced the Weimar Republic's Reichsmarine commanders to think creatively. Initially, there were two proposals: a coastal defence monitor-like ship, and a lightly armoured, faster vessel similar to a cruiser. In the end, they chose the latter option, albeit with much stronger armour.

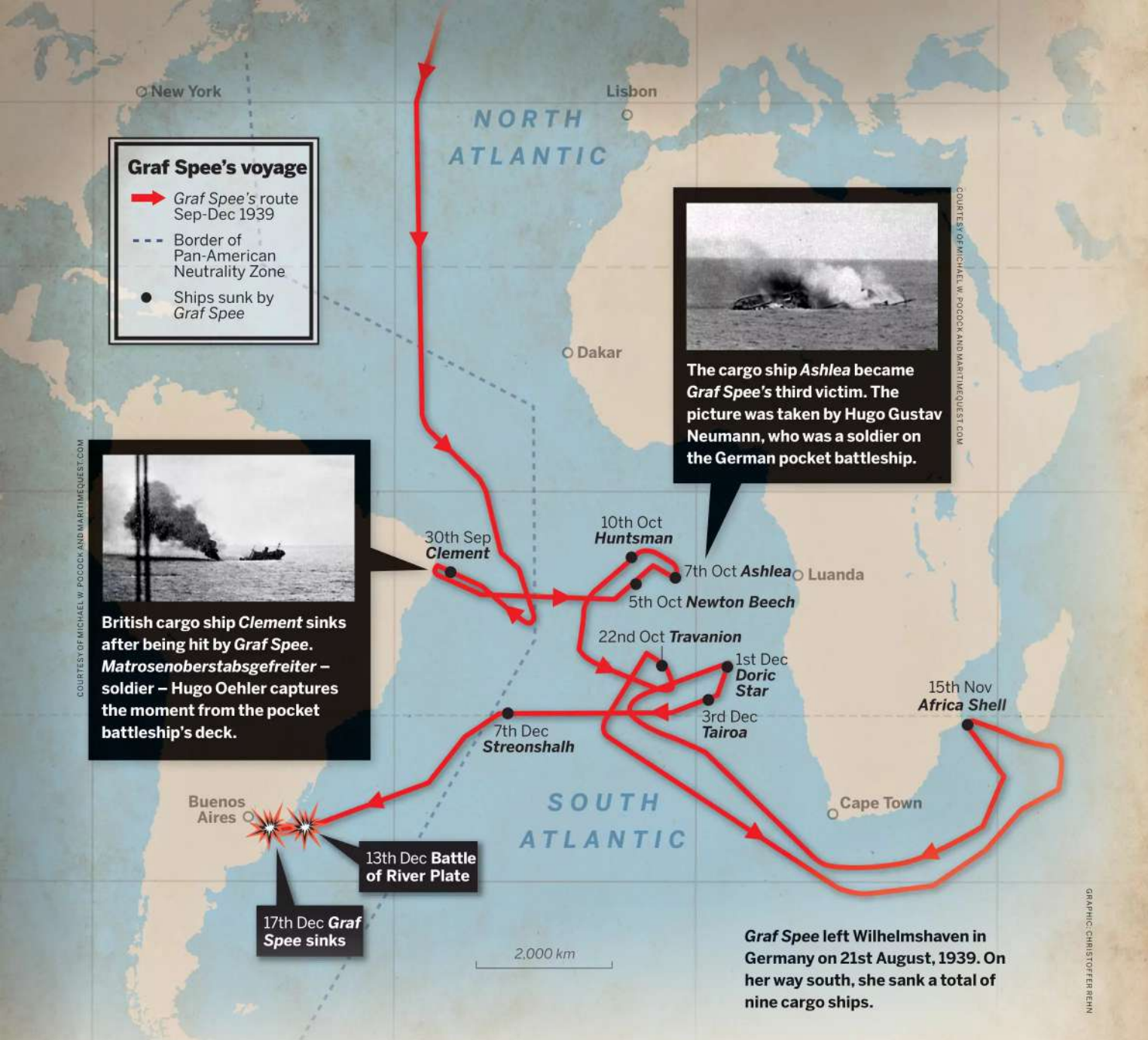
Thanks to the French occupation of the Ruhr, the Germans chose 28-cm ammunition to guarantee a supply of suitable artillery. Germany technically adhered to both the Treaty of Versailles and the Washington Naval Treaty.



**Deutschland** was the first of the three pocket battleships.

but in actuality, the maximum displacement should have been between 14,290-16,020 tonnes across all three vessels.





## First with groundbreaking radar

★ The first marine radar was a French civilian model mounted on the passenger ship *Normandy* to discover icebergs.

Germany only started developing radar for military purposes in earnest in 1933, and by 1936 a company called GEMA had come up with Seetakt, the world's first marine fire-control radar. Its antenna was stationary and mounted on the main rangefinder. To swing it, the entire

rangefinder had to be rotated. *Graf Spee* was the first naval ship in the world equipped with radar in 1936.

An improved version (FuMo 22) arrived in 1939, and *Graf Spee* was using this type when the ship was scuttled. Early radar was sensitive to both moisture and vibration during shelling. The antenna could also be damaged if the ship shook too much in a heavy swell.

The British weren't far behind and had a prototype for naval fire-



Rangefinder



control radar ready in December 1939. The first radar was then mounted on the battleship HMS *Nelson* in June 1940.

After sinking *Graf Spee*, British naval intelligence personnel were soon in place to study the radar so that they could take countermeasures. Personnel from the US light cruiser *Helena* also boarded the wreck at the beginning of 1940 to – among other things – examine the radar.





One of HMS Exeter's crew performs a thumbs-up on the ship's return to Plymouth after the Battle of River Plate.

► in the South Atlantic. Before they sank the ship, they sent out emergency signals containing false information about both the *Huntsman's* position and her fate, claiming she'd been torpedoed.

The British now mistakenly believed that at least two German ships were operating in the South Atlantic. Their suspicions appeared to be confirmed when *Graf Spee* sank the merchant vessel *Trevanion* on 22nd October. After the attack, *Graf Spee* snuck around the Cape of Good Hope and sought temporary refuge in the Indian Ocean. British merchant ships were now ordered to send emergency signals as soon as enemy ships attacked them. In her new theatre of operation, *Graf Spee* sank the tanker *Africa Shell* off the Mozambique Channel on 15th November. Four days later, the pocket battleship was back in the South Atlantic.

**ON THE WAY** back, Langsdorff saw a further opportunity to confuse the enemy: he built an extra forward 28-cm gun turret that resembled a second funnel, all in wood. At the same time, a fake bow wave was painted on the ship's hull to give the impression she was cruising at a higher speed. Thus, the ship could now be easily confused for the British

## "LANGSDORFF SAW A FURTHER OPPORTUNITY TO CONFUSE THE ENEMY"

battlecruiser HMS *Renown*. Confusion was further increased by painting *Graf Spee's* name on one side of the ship, and *Deutschland* (her other sister ship) on the other.

On 2nd December, *Graf Spee* attacked another British ship – Blue Star cargo liner *Doric Star* – off Walvis Bay in South West Africa (now Namibia). This time, *Doric Star's* distress call was picked up by a steamer off St Helena. The following day, *Graf Spee* sank British cargo ship *Tairoa*. The Royal Navy then dispatched ships from Port Stanley on the Falkland Islands to Argentine and Brazilian waters in the belief they were hunting *Admiral Scheer*. On 7th December, British freighter *Streonshalh* was sunk, marking the culmination of German activity in the South Atlantic. Captain at sea Langsdorff now chose to head for the Rio de la Plata's river mouth to give the impression he was thinking of rounding Cape Horn and navigating into the Pacific. His real aim was to sail home to Germany, where a much-needed refit awaited.

Finally, on the morning of 13th December at 06.08, Commodore Henry Harwood, commanding a British squadron, spied smoke on the horizon from his flagship, the light cruiser HMS *Ajax*. At 06.14, the Battle of River Plate began.

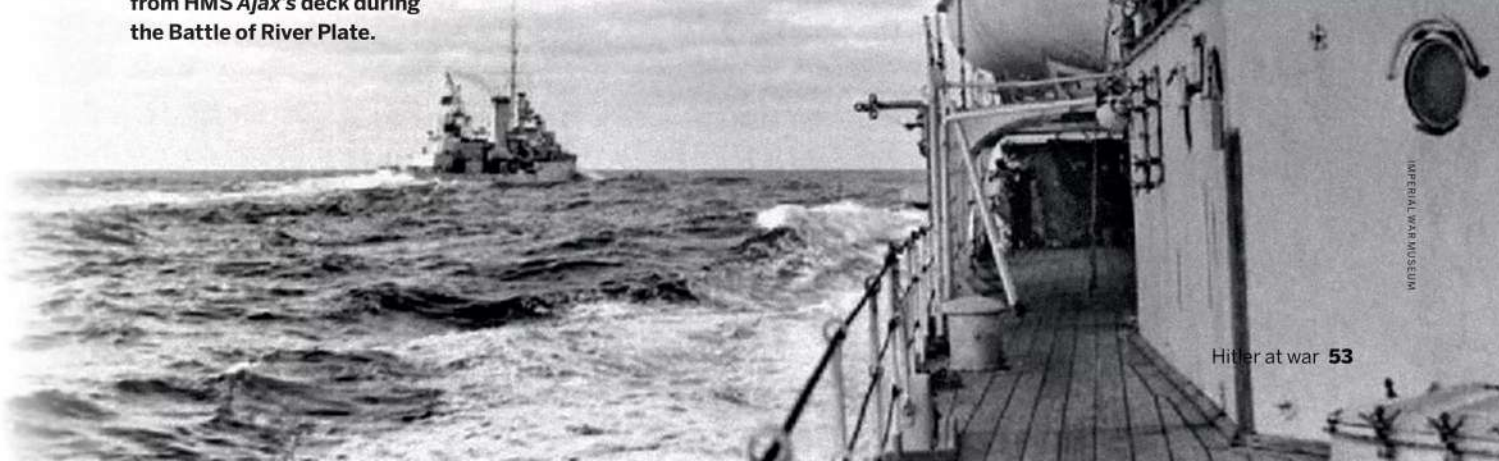
Three British cruisers – HMS *Exeter*, *Ajax* and HMNZS *Achilles* – launched their attack



The false bow wave that Langsdorff painted on *Graf Spee's* bow.

The article continues on page 56 ►

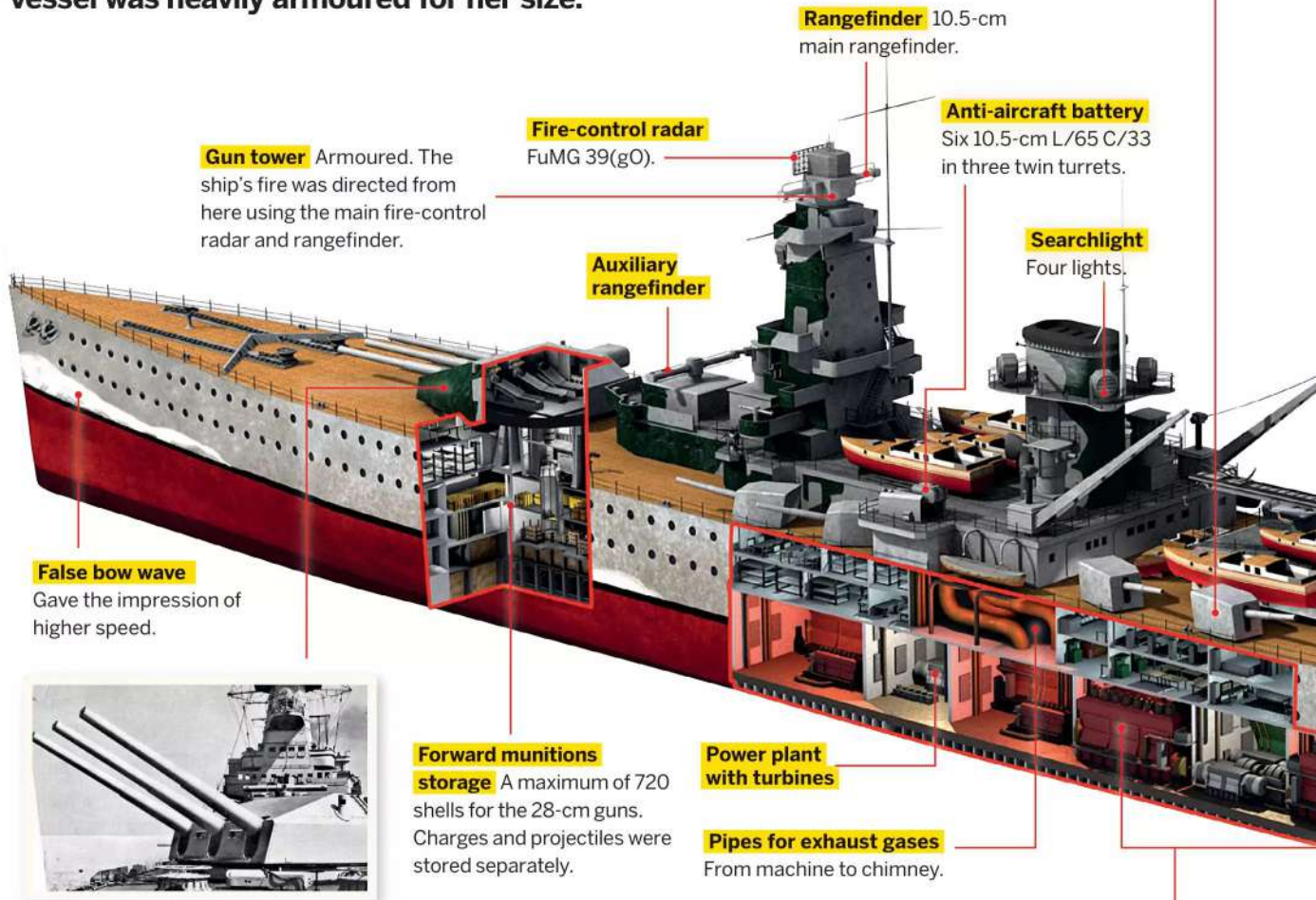
HMS *Achilles* photographed from HMS *Ajax's* deck during the Battle of River Plate.





# GRAF SPEE

**Admiral Graf Spee** was designed to be able to knock out any ship fast enough to catch the pocket battleship. The vessel was heavily armoured for her size.



## The crew in August 1939

A total of 1,055 men

39 officers

47 NCOs

950 other crew divided into ten units

1 captain





**Aircraft catapult** Rotating mount, originally for a Heinkel He 60. Later, an Arado Ar 196 reconnaissance aircraft (pictured) was deployed. The photo is from the cruiser Admiral Hipper.

## ADMIRAL GRAF SPEE

**Type:** Pocket battleship.

**Class:** Deutschland class.

**Laid down:** 1st October, 1932.

**Launched:** 30th June, 1934.

**In service:** 6th January, 1936–17th December, 1939.

**Displacement:** 12,000–16,200 t.

**Length:** 186 metres.

**Width:** 21.6 metres.

**Draught:** 7.4 metres.

**Machinery:** Eight 9-cylinder double-acting MAN diesel

engines powering two propellers (40,770 kW).

**Top speed:** 28.5 knots.

**Range:** 8,900 nautical miles at 20 knots.

**Crew:** max 1,150.

**Armaments:** 6 x 28-cm guns, 8 x 15-cm guns, 6 x 10.5-cm flak guns, 8 x 37-mm flak, 8 x 20-mm flak, 8 x 533-mm torpedo tube.

**Aircraft:** Two Arado Ar 196 seaplanes, a catapult.

**Crane** Two cranes to lift aircraft onboard if they landed on the water.

**Auxiliary rangefinder**

**Main guns (rear)**

Aft triple turret with 28 cm L/52 C/28 guns. Had a range of just over 30 km.

**Light anti-aircraft battery**

Eight 3.7-cm L/83 C/30 twin flak guns.



Areas reinforced with thicker armour.



Location of the armaments as viewed from above.

■ Main guns ■ Flak guns ■ Torpedo tubes

**Light anti-aircraft battery**

12 2-cm L/65 flak guns in single configuration.

**Torpedo tubes** Two rotatable armoured quadruple 53.3-cm torpedo tubes.

GRAPHIC: CHRISTOPHER REHN

**Aft munitions storage**

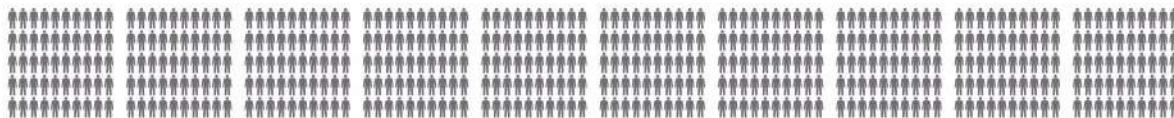
A maximum of 720 shells for the 28-cm guns. Charges and projectiles were stored separately.

**Waterline**

**19 civilian crew**



3 hairdressers, 3 chefs, 3 tailors, 3 cobblers, 7 waiters







COURTESY OF MICHAEL W. POCOCK AND MARITIMEQUEST.COM

Some of the *Doric Star* crew in a lifeboat before being taken up on *Graf Spee*'s deck. Other castaways ended up on *Altmark*.

## Altmark Incident led Norway into war

★ *Graf Spee*'s supply ship *Altmark* eventually managed to reach Norway's coast with around 300 prisoners. She then travelled through neutral Norwegian waters en route to Germany, but was spotted by the British who demanded Norway inspect the ship. Three cursory inspections failed to reveal the prisoners, and the Norwegians were content to escort the ship south.

On the morning of 16th February, 1940, *Altmark* was intercepted by the British destroyer *Cossack*. *Altmark* then sought refuge in the Jøssingfjord, protected by a Norwegian torpedo boat that lay in the mouth of the fjord. *Cossack* radioed London for instructions, and was told they "should board *Altmark*, liberate the prisoners, and take possession of the ship". They should warn

the Norwegians to "stand off", but *Cossack* should use as little force as possible.

The same night *Cossack* entered the Jøssingfjord and boarded *Altmark*, amid protests from the Norwegian torpedo boat. In the fighting that followed, seven Germans were killed and several others wounded. But the prisoners were found and freed by the *Cossack*'s crew. The British destroyer then returned to sea.

The *Altmark* Incident had both diplomatic and political consequences. It proved to Hitler that Norway couldn't – or wouldn't – remain neutral towards the British. The fact the British had mined the sea off Norway to prevent German warships from sailing along the Norwegian coast, combined with Germany's need to control access to Swedish iron ore shipped out of Narvik, meant the *Altmark* Incident reinforced the argument Hitler should invade and occupy Norway.

► on *Graf Spee* at the mouth of the Rio de la Plata. Initially, the German ship's artillery was far more effective than the British, thanks to *Graf Spee*'s radar system to help it gauge firing distances. During the battle, *Graf Spee* also created smokescreens to complicate things further for the British.

The pocket battleship's heavy artillery ruthlessly hammered at the British cruisers, who had difficulty in achieving the same effect with their lighter guns. One officer on the increasingly damaged *Exeter* was heard to exclaim in frustration: "We might just as well be bombarding her with a lot of bloody snowballs."

Despite the early damage, *Exeter* continued to shell *Graf Spee*, and finally managed a direct hit on the German vessel's fire-control tower. But *Graf Spee* also enjoyed success, against both *Exeter* and *Ajax*. *Exeter* was eventually ordered to withdraw while *Achilles* and *Ajax* continued firing despite their own extensive damage.

**ACHILLES BELONGED TO** the New Zealand fleet. On the ship's command bridge, Lieutenant Richard Washbourn suddenly recognised the type of ship heading towards them. He turned to the ship's captain, Edward Parry, who responded with: "My God, it's a pocket battleship!"

Before they could react, a volley from *Graf Spee*'s heavy guns struck *Achilles*. Metal splinters peppered the ship from her waterline to the masthead. Washbourn survived in the control tower, but red-hot shrapnel wounded both Parry and his signal officer in the legs. "It resembled a slaughterhouse on a particularly busy day," Washbourn later recounted to a friend in a letter, with multiple deaths and severely injured officers and crew.

Despite the British losses, the Germans had no opportunity to escape into the Atlantic, and Langsdorff chose to withdraw. *Graf Spee* sought shelter in the neutral port of Montevideo where, according to international law, she could stay for up to 72 hours. The British attempted to pen the German ship inside the Uruguayan port, but their resources were limited.

The night of 13th-14th December saw *Graf Spee* anchored in the roadstead outside the Uruguayan capital Montevideo while British ships lurked out to sea. Langsdorff's next move was a strange one from a British viewpoint: instead of trying to break

## "IT RESEMBLED A SLAUGHTERHOUSE ON A... BUSY DAY"



A shell hits the *Doric Star*, which sank.





through the thin British barrier, he left the ship near the Uruguayan port area. The German commander negotiated an extension of his stay with Montevideo's harbour authorities, which the British quietly accepted because it gave them time to bring in reinforcements.

The British managed in various ways to delay *Graf Spee's* departure: one tactic was to instruct their own merchant ships in the port of Montevideo to put to sea one by one, thus – according to international law – delaying the German pocket battleship's departure by 12 hours for each departing British ship.

**ON 17TH DECEMBER,** Langsdorff telegraphed Berlin. He wanted to try and break out. The response from Berlin was clear: both Hitler and supreme naval commander Erich Raeder supported the initiative, but if it failed, he must scuttle *Graf Spee*. The situation was unclear, and Langsdorff's artillery officers confused the three lurking British cruisers with significantly stronger ships. It would turn out to be a fatal error and explained why he made no attempt to break out.

Instead, the crew prepared to scuttle *Graf Spee*, and only about 40 men stayed on board. The rest of the crew were taken on to the German freighter *Tacoma*.

At 19.52 on 17th December, the final act was initiated when Langsdorff steered *Graf Spee* towards the British blockade line at the mouth of the Rio de la Plata. There the ship was blown up by her crew. When the British ships approached Montevideo's port, *Graf Spee* was already a burning wreck. On board, the British found a rather odd antenna. It was the Germans' state-of-the-art radar system.

**THREE DAYS LATER,** the naval battle received a dramatic epilogue. In a hotel room in Buenos Aires,

Captain at sea Hans Langsdorff chose to end his life by shooting himself in the head. When found, he was wearing a uniform and lying on the German flag – according to unconfirmed reports, it was the imperial Flag of Germany and not the Nazi flag. In a farewell letter, Langsdorff wrote: "I alone bear the responsibility for scuttling the *Graf Spee*. I am happy to pay with my life for any possible reflection on the honour of the flag. I shall face my fate with firm faith in the cause and the future of the nation and of my Führer."

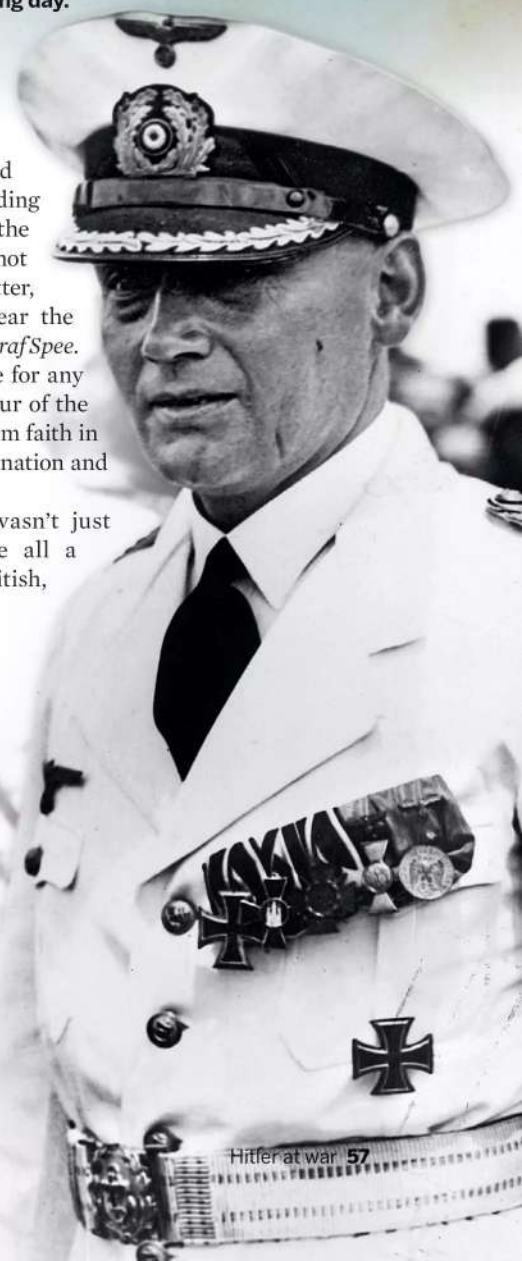
For Germany, the battle wasn't just a military defeat, but above all a propaganda disaster. For the British, it was similarly triumphant. 🇬🇧

**Lars Ericson Wolke** is a writer and professor of military history at the Swedish Defence University.

**Richard Areschoug** is a military history writer.

**Further reading:** *The Battle of the River Plate* (1988) by Dudley Pope.

**Read more about the damage to Graf Spee over the page. ▶**





# Shells knocked ship's kitchen out of action

**The battle between *Graf Spee* and the three British cruisers outside the mouth of the Rio de la Plata was extremely fierce.**

At the beginning, the heavy cruiser HMS *Exeter* landed some 20.3-cm shells on the armoured pocket battleship before the Germans' more powerful 28-cm guns inflicted severe damage in return. The two light cruisers subjected *Graf Spee* to a hail of 15.2-cm shells – *Achilles* fired a total of 1,240 projectiles, almost all its armament.

Only 17 hits were reported, however, and none of these caused serious damage. The problem was the 15.2-cm charges had the fuze at their base, so they failed to penetrate *Graf Spee*'s armour. If the British had placed the impact fuze on the tip of the shell, the effect would have been significantly greater.

**INSTEAD, IT WAS** *Exeter*'s few hits that inflicted the most significant damage to *Graf Spee*. They

knocked out the desalination plant, which meant they could no longer produce fresh water onboard. Also destroyed was the facility for cleaning the engines' lubricating oil, while *Exeter* also took out all the ship's kitchens, so the crew couldn't eat hot food.

Although the ship would have been able to break through the British blockade outside Montevideo, it wouldn't have been possible for the wounded ship to reach home. Her damage would also have been difficult to repair in the short time *Graf Spee* was permitted to remain in the harbour.

**WHEN GRAF SPEE** arrived at Montevideo, German propaganda spread information that the ship had been attacked with mustard gas shells. Several among the crew had blisters on the skin that was typical of this gas, but it soon turned out the ship's fire-extinguishing agent Ardexin had caused the injuries. The battle damaged several containers of this substance, and the agent had spread over the crew. ✚

**“IT WOULDN'T HAVE BEEN POSSIBLE FOR THE WOUNDED SHIP TO REACH HOME”**





## Fight over salvaging ship's wreck

★ Part of the *Graf Spee*'s wreck remained above water, and a British company used a third-party front to trick the Germans into selling it the salvage rights while the war still raged. The company scrapped most of the pocket battleship during 1942-43 while simultaneously disseminating information about its construction to the intelligence services. The remainder of the wreck lay 11 metres below water.

In 2004, a company began to salvage parts of the wreck on behalf of the Uruguayan government, who believed it was an obstacle to shipping. Several sections were raised and preserved as memorials. The largest is one of the two main rangefinders, which is today



**The pocket battleship's main rangefinder was raised and stands today as a memorial in Montevideo's harbour.**

displayed in the port of Montevideo.

In 2006, part of the ship's stern was salvaged, adorned with the German eagle in gilded bronze. The eagle has caused controversy because of its symbolism to Nazis. It's currently in an Uruguayan warehouse awaiting a decision on its fate.

*Graf Spee* was blown up by her own crew and partly sank to the bottom of Montevideo on 17th December, 1939.



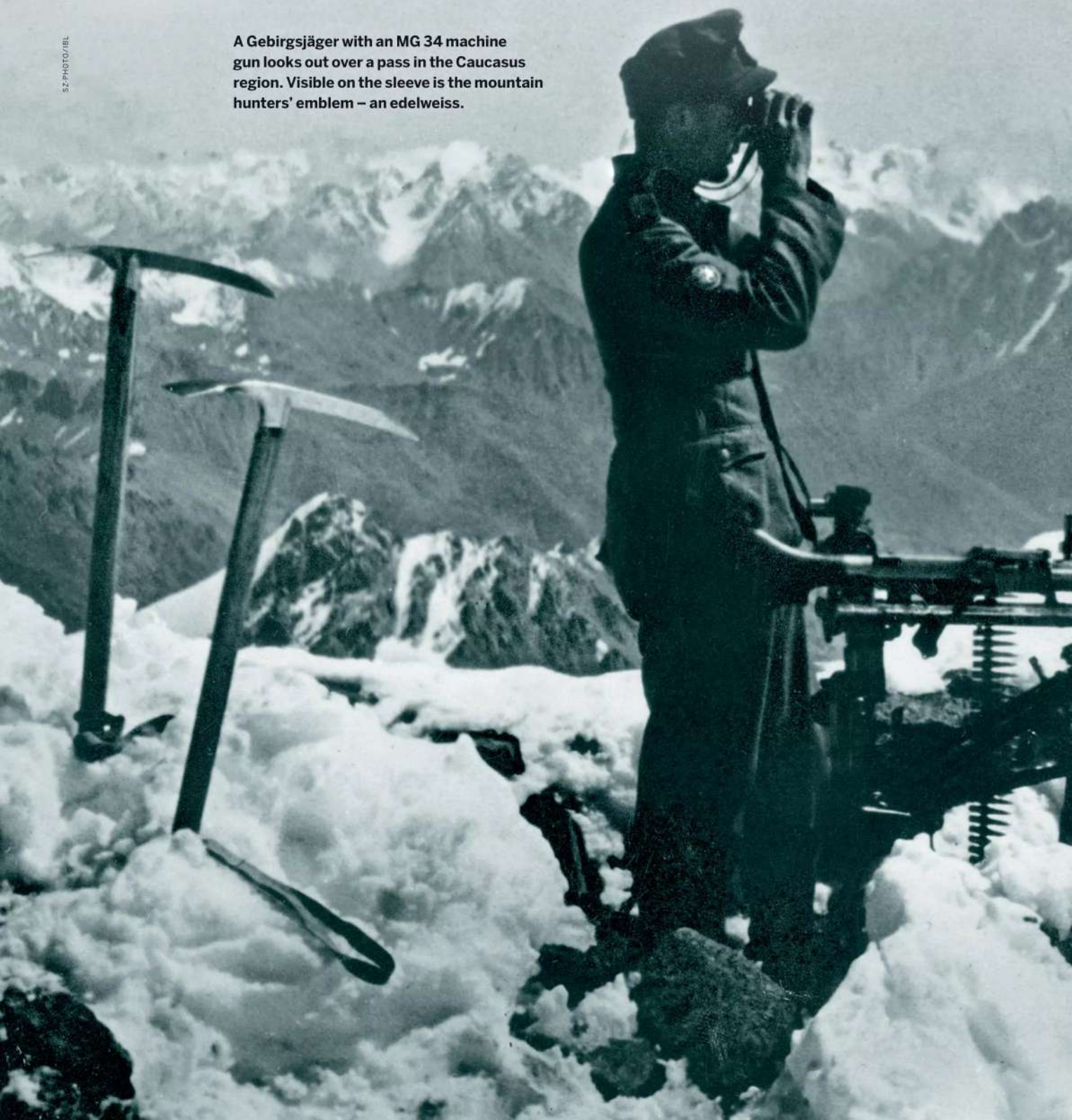


GERMAN GEBIRGSJÄGER 1915–45

# ELITE FORCE

A Gebirgsjäger with an MG 34 machine gun looks out over a pass in the Caucasus region. Visible on the sleeve is the mountain hunters' emblem – an edelweiss.

SZ PHOTO/IBL

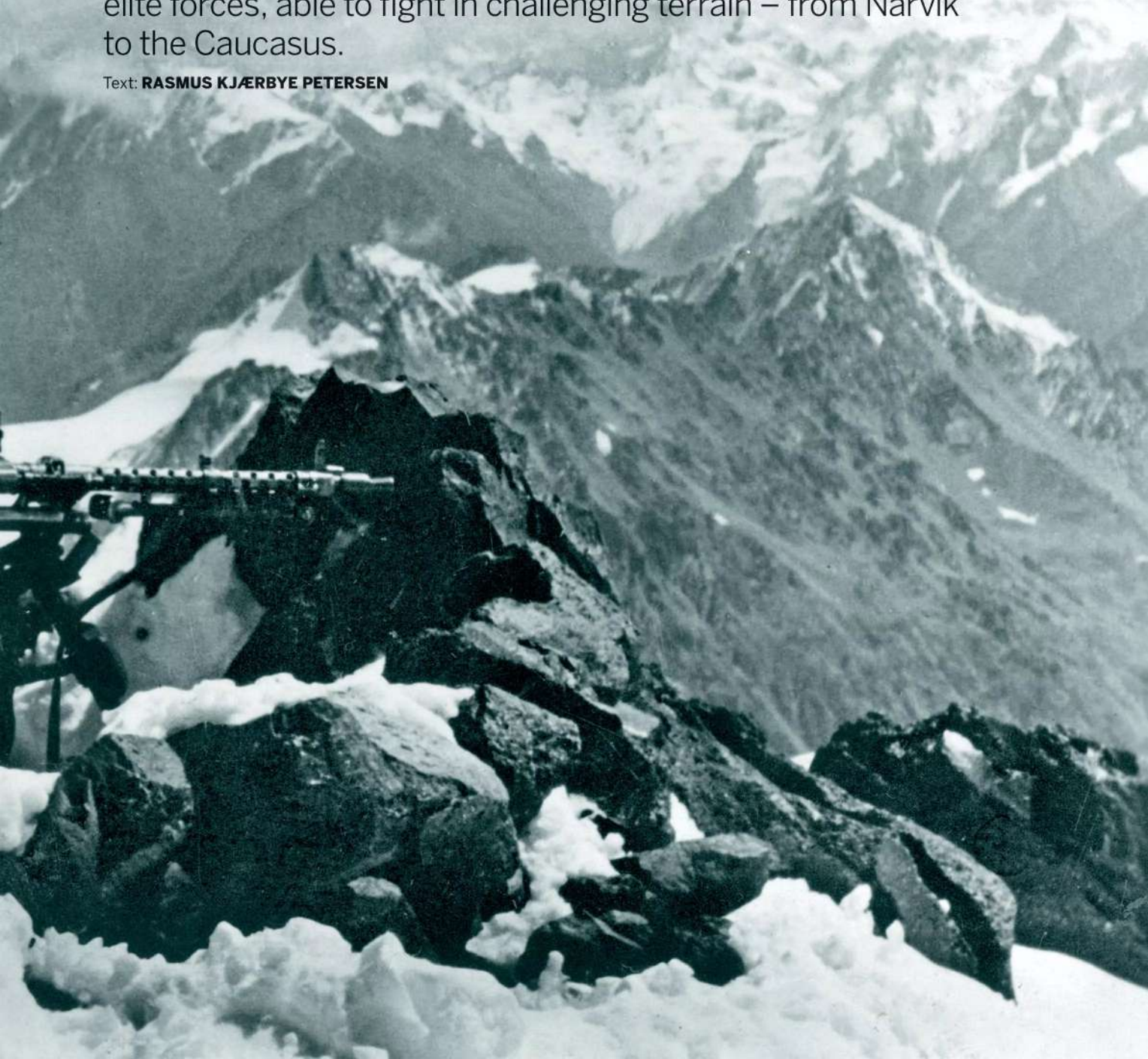




# AT ITS BEST

Peak physical training enabled the *Gebirgsjäger* – mountain hunters – to carry out their assignments in snow and freezing temperatures. They were one of the Third Reich's elite forces, able to fight in challenging terrain – from Narvik to the Caucasus.

Text: **RASMUS KJÆRBYE PETERSEN**





## GERMAN MOUNTAIN HUNTERS



The Austrian *Gebirgstruppe* – Mountain Troops – was the model for the German mountain hunters. Here, Austrian soldiers scale a cliff face to surprise an Italian unit on the other side. Isonzo 1915.

In the early 1900s, the idea of soldiers who could specialise in mountain combat was relatively new. Before the outbreak of World War I, only Italy (*Alpini* – Alpines – in 1872), France (*Chasseurs Alpins* – Alpine Hunters – in 1888) and Austria-Hungary (*Gebirgstruppe* – Mountain Troops – in 1906) had established special alpine units.

While Germany continued to be allied with Austria-Hungary and Italy, it required no forces in the Alpine region. But in May 1915, Italy left the Triple Alliance, and a few days later declared war on Austria-Hungary. It took both countries by surprise. Austria-Hungary's *Gebirgstruppe* had been sent to Galicia (located in modern-day Poland and Ukraine) to reinforce the faltering Russian front. This left no forces in the Tyrol but the local *Standschützen* – rifle companies – militia and a few undermanned forts to hold off the well-trained *Alpini*.

The Germans were better placed to mobilise forces to the new front quickly. They created a new corps, the *Alpenkorps* – Alpine Corps, consisting of Western Front veterans commanded

by Generalleutnant von Dellmensingen. Neither the general nor his men had been trained for the task, but a large number came from Bavaria, where many had experienced mountain life as civilians.

The *Alpenkorps* quickly transferred to the front at the Dolomites in Tyrol. Its mission was to help the Austrians patrol the border and defend their territory against incursion. However, the Germans were not allowed to cross the border, as Italy and Germany were not officially at war.

**LUCKILY FOR THE** defence forces, Italian military command didn't understand how to exploit its opponent's temporary weakness to go on the offensive. The *Alpenkorps* thus had time to learn. The Austrian *Standschützen*, who were masters of the mountains, shared their knowledge freely with their German allies. In return, the German veterans gave the militia a crash course in modern warfare. In this way, their joint action enabled the allies to stabilise the front before the Italians attacked.

In October 1915, Austria-Hungary reinforced the defence of Tyrol with its own troops, and so



the Alpenkorps was pulled out of the politically sensitive situation. It was a sad farewell. The efforts in Tyrol had created a strong bond between German and Austrian soldiers. During a ceremony at the Hotel Elefant in Bressanone (modern-day Italy), the Austrian archduke Eugen presented the Alpenkorps' representatives with a pin of edelweiss, the same alpine flower that adorned the Austrian Gebirgstruppe's collars. It marked the empire's official thanks for the Germans' help during their time of need.

20,000 pins were distributed to each of the Alpenkorps' troops. In this way, German and Austrian mountain forces established a bond that would continue into the next world war.

## MOUNTAIN BRIGADE, 1935–39

The Treaty of Versailles forbade Germany from creating special mountain units. But the Reichswehr didn't want to forget the lessons learned from the Alpenkorps and decided that all ordinary infantry divisions should include a battalion equipped for service in the mountains.

In 1935, Hitler broke the Treaty of Versailles and increased the Wehrmacht's pace of development. All existing mountain brigades consolidated into one *Gebirgs* – Mountain – Brigade led by Colonel Ludwig Kübler. A few months later, Kübler was tasked with expanding the brigade with the addition of two new regiments and an artillery unit.

Recruits came mainly from Bavaria in the same way they had in the Alpenkorps. Germany also had a regional police force trained for patrolling the Alps – this also became part of the Gebirgs Brigade.

The traditions of the Alpenkorps and the old historical ties between Bavaria and Austria meant there was a strong Austrian influence in the newly formed brigade, despite the extremely chilly relationship between Germany and Austria at this time. Not only did the brigade continue to use the edelweiss symbol, but its uniform was also more or less a copy of the Austrians' (see page 67).

In 1938 Hitler ended the conflict with his old homeland by annexing it into the new Third Reich, and the integration of the German and Austrian mountain forces proved surprisingly simple. One month after Anschluss, the Gebirgs Brigade was expanded and renamed the 1st Gebirgs Division. On the same day, the 2nd and 3rd Gebirgs Divisions came into being, staffed almost exclusively with former Austrian soldiers. These *Gebirgsjäger* – mountain hunter – forces became almost dominated by Austrians.

Kübler introduced a punishing training regime incorporating both Italian and Swiss experiences alongside his own ideas. In addition to regular infantry training – including exercise, weapon

## “THE INTEGRATION OF THE GERMAN AND AUSTRIAN MOUNTAIN FORCES PROVED SURPRISINGLY SIMPLE”

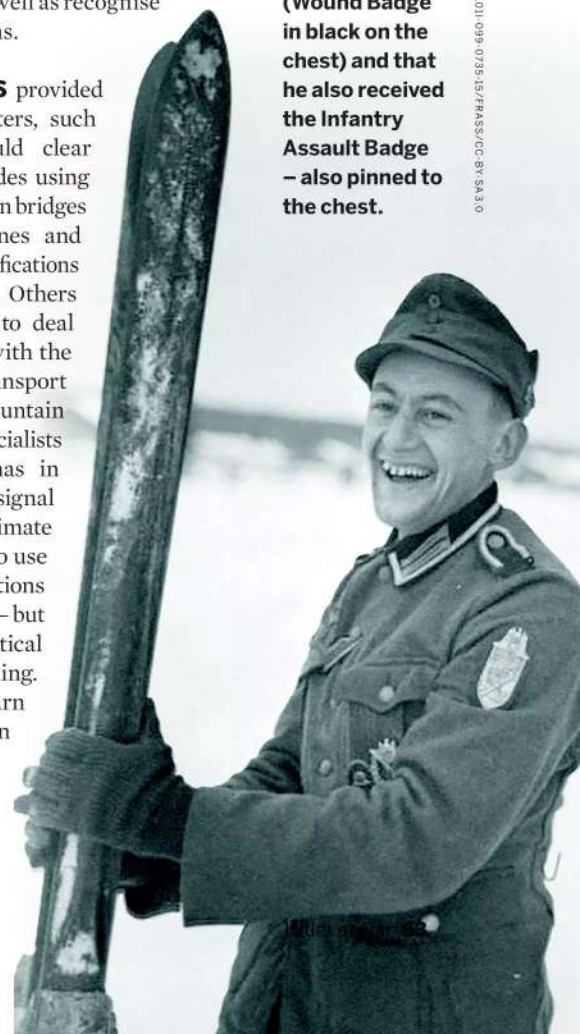
training and field exercises, which mountain hunters were expected to tackle without difficulty – they also learned specialist skills to help them deal with even the most mundane tasks in an alpine environment.

One such adaptation would be building up a fortification of rock to provide protection rather than trying to dig a trench, which was impossible due to the mountain bedrock being just below the ground. This rock protected against both bullets and an icy wind.

The Gebirgsjäger had to learn how to safely traverse terrain in single file, moving in a zigzag fashion while spacing themselves out to minimise the number of soldiers who would be carried away in an avalanche. Avoiding avalanches was naturally preferred, so they were also taught how to spot potential dangers as well as recognise changing weather patterns.

**EXTRA TRAINING WAS** provided for some mountain hunters, such as sappers. These would clear away debris from landslides using explosives, build suspension bridges or cable cars over ravines and construct bunkers and fortifications using available materials. Others were trained as medics to deal with injuries associated with the mountains and to help transport wounded up and down mountain slopes. Communication specialists learned to hang antennas in the treetops to avoid signal interference due to the climate – they were also trained to use signal flags with relay stations in cases of last resort. Last – but not least – came the practical mountaineering training. Gebirgsjäger had to learn how to get up and down mountain faces using axes, carabiner hooks and ropes. In addition, they had to be able ▶

This mountain hunter's insignia reveals he fought in Norway (Narvik Shield on the sleeve), that he was wounded once or twice (Wound Badge in black on the chest) and that he also received the Infantry Assault Badge – also pinned to the chest.





# GERMAN MOUNTAIN HUNTERS



**The Narvik Shield incorporated the anchor, aircraft propeller and edelweiss, a reference to the three military branches that were involved in the operation.**

► to ski, travel on snowshoes and survive a night on a mountain peak in temperatures well below freezing.

Specialist equipment was required (see page 66). Mountain hunters needed better winter clothes than most other German soldiers – essential for coping with the extreme environment. Their anoraks, windcheaters and snow-white camouflage would later spark envy among their less fortunate comrades on the Eastern Front.

**THE GEBIRGS DIVISIONS** also had access to pack animals (ponies, mules and even St Bernard Dogs). These animals were usually better suited to the alpine landscape than trucks. During the war, the mountain hunters also learned to make use of whatever was available locally: reindeer in Lapland, dog sledges on the Murmansk front and camels in the Caucasus.

The most crucial pack animal, however, was the Gebirgsjäger himself. He was considered light infantry, but that mainly referred to the division's lack of heavy equipment in the form of artillery, armour and – not least – trucks. Without these, the elite soldier and his faithful mule had to carry every kilogram they needed through the mountains. Marching songs such as the popular Austrian

*Kaiserjäger march* – The Kaiser March – became essential travelling companions.

## PROPAGANDA VICTORY IN NARVIK, 1940

One of the first and most significant challenges for the Gebirgsjäger came with the conquest of Norway in April-May 1940. 10 Destroyers accompanied by civilian cargo ships transported soldiers from the 2nd and 3rd Gebirgs Divisions across the North Sea, a first-time experience for many of the Austrians. Without any specialised training in sea landing operations, they were put ashore in several places along the Norwegian coast, but fortunately for them Norwegian resistance was initially limited.

The target was Narvik – a vital shipping port for Swedish iron ore. On 9th April after a short battle with two Norwegian coastguard ships, a regiment from the 3rd Division, consisting of 1,900 men under the leadership of the division commander General Dietl, was put ashore.

The Norwegian garrison in Narvik quickly surrendered, and the mountain hunters secured the city without loss.

Victory was short-lived. The next day and again on 13th April British warships sailed into the fjord,

**Soldiers from the 3rd Gebirgs Division make their way through fjords around Narvik in dinghies. May 1940.**







**Camels in Caucasus and reindeer in Lapland. The Gebirgsjäger learned to make use of local animals to transport themselves and their equipment in difficult terrain.**

sinking all ten destroyers plus a ship carrying both ammunition and artillery. The division was left isolated and could only receive supplies from the air.

Dietl, who was determined to hold the Gebirgsjäger's positions, was awaiting relief from German forces who'd invaded southern Norway. A bridgehead at Trondheim was secured, and other regiments from the 2nd and 3rd Divisions soon began to march north. But their advance was delayed by the growing Norwegian resistance and the difficult-to-navigate North Norwegian mountains.

In Narvik, Dietl organised his defence. The 2,600 German sailors who'd made it to land were equipped with Norwegian weapons and tasked with holding the city. The mountain hunters established extended battle lines in the surrounding mountains, and their success included holding off a smaller force of British naval infantry that came ashore north of the city.

**ON 24TH APRIL**, the Norwegian 6th Division launched an attack against one of the Germans' advanced positions at Lappaugen. One battalion attacked the mountain hunters' positions from the front while another fought through a mountain blizzard to engage them from Narvik. During a desperate counterattack against the encircling forces, 165 Gebirgsjäger used Norwegian prisoners – many of them civilians – as human shields and thus managed to defeat the exhausted Norwegians. Soon, however, the Germans felt compelled to give up Lappaugen, as it was seen as being too vulnerable.

Another reason for Dietl's decision to start pulling back his lines around Narvik was that the Allied forces were building in earnest. On 28th April the French Foreign Legion, Chasseurs Alpins and

## **“THESE ANIMALS WERE... BETTER SUITED TO THE ALPINE LANDSCAPE THAN TRUCKS”**

*Samodzielna Brygada Strzelców Podhalańskich* – Polish Independent Highland Brigade – landed on either side of the city. The Allies had decided to try and keep Northern Norway as a permanent front, which meant they needed to recapture Narvik.

The Germans also received reinforcements. About a thousand mountain hunters volunteered to take part in an air landing – something completely new to them – to help their besieged comrades. But it didn't help much against a strength of nearly 25,000 Norwegians, Britons, French and Poles assembled against them, ready for battle by mid-May.

**TOUGH RESISTANCE FROM** the Luftwaffe meant the Gebirgsjäger were not immediately forced to surrender to the superior force, but the situation was becoming increasingly precarious. After yet another Allied landing operation on 28th May, Dietl was forced to give up Narvik and pull his remaining forces up into the mountains ahead of what would become the final battle.

However, the overall strategic situation had already changed. Their collapse in northern France forced the Allies to withdraw certain forces and abandon the defence of Norway. Narvik was captured solely to destroy the port facilities. After that, the Allies could retreat having completed ►



**General Eduard Dietl led the regiment from the 3rd Gebirgs Division, who fought in Narvik.**



## GERMAN MOUNTAIN HUNTERS

► their mission. On 8th June Dietl's forces moved into Narvik again without encountering further resistance, and finally on 13th June, relief forces arrived from the south.

The Nazi propaganda machine presented it all as a grand victory, but the fact is that the mountain hunters had failed in their attempt to secure the port before the Allies were able to evacuate their troops and local townsfolk. That they survived was the Gebirgsjäger's only real victory. Psychologically, however, Narvik proved critical, not least due to the integration of Austrians as an equal part into the new Greater Germany's population.

### THE STORMING OF GREECE, 1941

In April-May 1941, Hitler was forced to assist Mussolini in his failed invasion of Greece. Despite his focus being the imminent attack on the Soviet Union, the Führer couldn't risk the British opening a new front against him in the Balkans at such a crucial moment.

The 1st Division was teamed up with the newly created 4th Gebirgs Division, advancing through Yugoslavia without encountering any real resistance. It was not as simple for the 5th and 6th Gebirgs Divisions, who had been ordered to march over the high Rhodopes mountain range in Bulgaria and break through the heavily fortified Greek Metaxas Line.

On 6th April, the attack started well, helped by thick fog that hid the German advance. However, they were soon discovered, and the Greeks opened fire. The mountain hunters had – with great difficulty – managed to drag their artillery over the mountains, but neither this nor the many Stuka aerial attacks were enough to take out the Greek bunkers. The Greek defenders were even cold-blooded enough to order their artillery to fire on their own positions when the Gebirgsjäger attempted to capture the bunkers in close combat.

The battle cost the Germans dear, but after three days Major General Julius Ringel's forces managed to break through the line in several places. At the same time, armoured forces from Yugoslavia arrived at Thessaloniki, and the Greek position in the north became untenable. The Germans continued to advance and after only 20 days had taken control of the entire Greek mainland.

**BRITISH AND GREEK** forces retreated to Crete, from where they continued to threaten the southern border and convoy routes of the Axis powers in the Mediterranean. Hitler ordered a quick conquest of the island and on 20th May, Operation Mercury began. It focused on *Fallschirmjäger* – paratroopers – landing at number of strategic points but resulted ►

## Equipped for mountain battle

**Gebirgsjäger were equipped for high-altitude missions during harsh weather conditions. Here's a mountain hunter from 1940 with some of his most important tools.**



#### Climbing rope

So-called 'core sheath' type with an inner core of natural fibre (later also nylon), covered by a braided sleeve.

**Axe** There were two types of hunter axes: a short shaft for use on steep rock walls and a long shaft that also served as a walking pole.



**Snow shoes** There were many types of snowshoes – some round, others more oval – designed for different environments and snow types. They shared a similar design.



#### Skis

Detachable footplate for mountain boots.





**Snow goggles** Protected against snow blindness.

**Bergmütze** Austrian-styled ski cap. The newly created mountain hunter units assumed the cap, partly linked to the Austrian mountain hunters. From 1943, a variant with a longer peak was issued throughout the Wehrmacht.

**Anorak** All mountain troops were equipped with an anorak to wear over the field jacket as protection against the cold. It was eventually replaced by the army's standard winter uniform, which was produced from 1942.



**Edelweiss** A variant of the insignia was worn on the sleeve.

**Rifle** Most Gebirgsjäger used a Kar 98k, the German army's standard rifle, but some received a shortened Czech-produced variant, Gew 33/40 (see picture), which could also be used as a walking pole.



**Rucksack** Mountain hunters often had to carry more equipment than other soldiers, so their backpack was larger.

**Edelweiss** This alpine flower became the symbol of the Austrian Gebirgstruppe in 1907, and from 1915 it was also adopted by the German Alpenkorps. Mountain forces still use the symbol today. A variant of the emblem can be seen on the uniform cap.



**Field jacket** Gebirgsjäger used the same *Feldbluse* – army field tunic – Model 1936 as other soldiers in the army. However, it changed considerably over time.

**Berghosen** Special trousers with reinforced fabric in exposed areas. Trousers legs were made narrower so that they could be tucked inside the boots. In the cold and snow, mountain hunters wore a special winter suit over the top.

**Puttees** Prevented dirt and water from entering the ankle mountain boots. They were usually short, but it could vary. SS mountain hunters preferred simpler gaiters instead.

**Boots** Iron hobnails under the soles provided good grip. In addition to being practical, the boots were another thing that was associated with the Austrian troops.



OSPREY PUBLISHING



# GERMAN MOUNTAIN HUNTERS

► in many casualties. The 5th Division were tasked with saving the situation.

Their help was not appreciated. The paratroopers, determined to secure at least one victory before the mountain hunters arrived, impeded them as often as possible. General Ringel's Ju 52 transport aircraft were struck by mysterious 'technical problems' on the runway. Gebirgsjäger already seated in their transport planes were then unceremoniously unloaded in favour of more paratroopers, who flew into Maleme airport under heavy shelling.

**BY 22ND MAY**, Maleme was in German hands and Ringel's difficulties disappeared. The lack of aircraft meant that several regiments from the 5th Division had to be sailed to the island in a small flotilla of Italian torpedo boats, Greek fishing vessels and rafts. The Royal Navy successfully intercepted the fleet, but an Italian torpedo boat's resolute action prevented a massacre. Nevertheless, around 300 mountain hunters drowned. Only a small number managed to reach land in Crete, soaked and weaponless.

Once the Gebirgsjäger returned to solid ground, they were in their element. Ringel took over command in Crete and immediately sent one of

the two battalions he had brought over in the first wave of transport aircraft to the Allies' new line of defence at Platanias. There he attempted to contact one of the encircled groups of paratroopers in the valley around Agia.

The village was held by the New Zealand Maori Battalion, which was able – with powerful artillery support – to prevent the Germans using the bridge as a crossing point. The mountain hunters weren't daunted, however, climbing the mountains to bypass the bridge, after which the New Zealanders were forced to retreat to Galatas.

Ringel chose a very conservative and methodical approach, perhaps as a reaction to the rushed air landings. He secured each captured position and brought in reinforcements before taking the next step. Thanks to the Luftwaffe's protective umbrella, the rest of his division and all new equipment could now be transported in, so there was no need to take any unnecessary risks.

By inexorably forcing the enemy out of Galatas, Ringel finally reached the paratroopers who'd

## “THIS WAS A REAL MOUNTAIN WAR”

been trapped outside Chania. The Allies could no longer save the situation in Crete, and an evacuation was started. Around 18,000 men managed to get to Egypt while 12,000 others found themselves in German captivity.

Crete was a pyrrhic victory for the paratroopers, but the efforts of the Gebirgsjäger were a textbook example of a well-planned and skilled operation. Even the paratroopers' commander, General Kurt Student, praised them for their bravery.

## CAUCASIAN CLIMAX, 1942

In July 1942 Hitler set new targets for *Heeresgruppe Süd* – Army Group South – and he split it into two army groups, A and B, which would simultaneously capture Stalingrad and the Caucasian oil fields. The latter operation was given the code name *Edelweiss*, a clear indication that it was a task for the mountain hunters.

The high Caucasus mountain range lay between XXXIX Mountain Corps, comprising the 1st and 4th Gebirgs Divisions, and its target. This would be the Gebirgsjäger's biggest challenge. The Caucasus were not only the highest mountains that German mountain hunters had operated in, but there were also Soviet troops who defended fiercely, despite the height. This was a real mountain war.

The German army reached the foot of the Caucasus in Karachay-Cherkessia and began to climb the mountain range on 17th August. Local ethnic groups, whose nationalist ambitions had been brutally suppressed by the Soviet Union, showed great sympathy towards the Germans. For once, the mountain hunters experienced how it was to be welcomed as liberators. For Hubert Lanz, commanding the 1st Division, the conquest of the Caucasus was as much a symbolic as a military victory. Now the Third Reich would reach Europe's eastern boundary. Therefore, he also planned a symbolic action: to climb Elbrus, Europe's highest peak.

**ON 9TH AUGUST** Lanz assigned this action to Captain Heinz Groth and his force of specialised mountaineers. Groth and his 29 men started the ascent on 18th August. But before they could draw attention to Elbrus, they first had to capture a small Soviet position at an altitude of 4,200 metres.

The climb was too steep for pack animals, so the Gebirgsjäger could only bring essential survival ►



**Mountain hunters in camouflage uniform with MG 34s on their way to relieve a machine gun group. Caucasus, 1943.**





UJLSTEIN/BL

Waffen-SS mountain troops in southern Hungary in January 1945. The soldiers have full-coverage SS camouflage uniform (which had white lining and could also be turned inside out) and are armed mainly with Kar 98ks.

## SS mountain hunters fought their own battles

★ Despite a rapid victory in the Balkans, Germany had a lasting problem with mountain-based guerrilla soldiers in Greece and Yugoslavia. Combating partisans was a task for the SS, but SS chief Heinrich Himmler saw this as an excellent opportunity to set up his own mountain hunter divisions. The first of these were staffed with Germans, but as the war became increasingly desperate, all volunteers were welcomed,

regardless of origin. Foreign divisions used the opportunity to settle local disputes with neighbouring people, and their bloody behaviour became notorious. Discipline was not particularly good in these divisions, so they were rarely put up against regular troops.

The 13th Waffen Mountain Division of the SS Handschar comprised mainly Croatian and Bosnian Muslims, who considered

the fight against the partisans as a struggle against their former Serbian oppressors. Himmler allowed the division to have their own imams and perform Friday Prayer, and the fez was permitted headgear.

The name Handschar referred to a type of knife or scimitar, which also adorned the collar on the SS mountain hunters' uniforms.

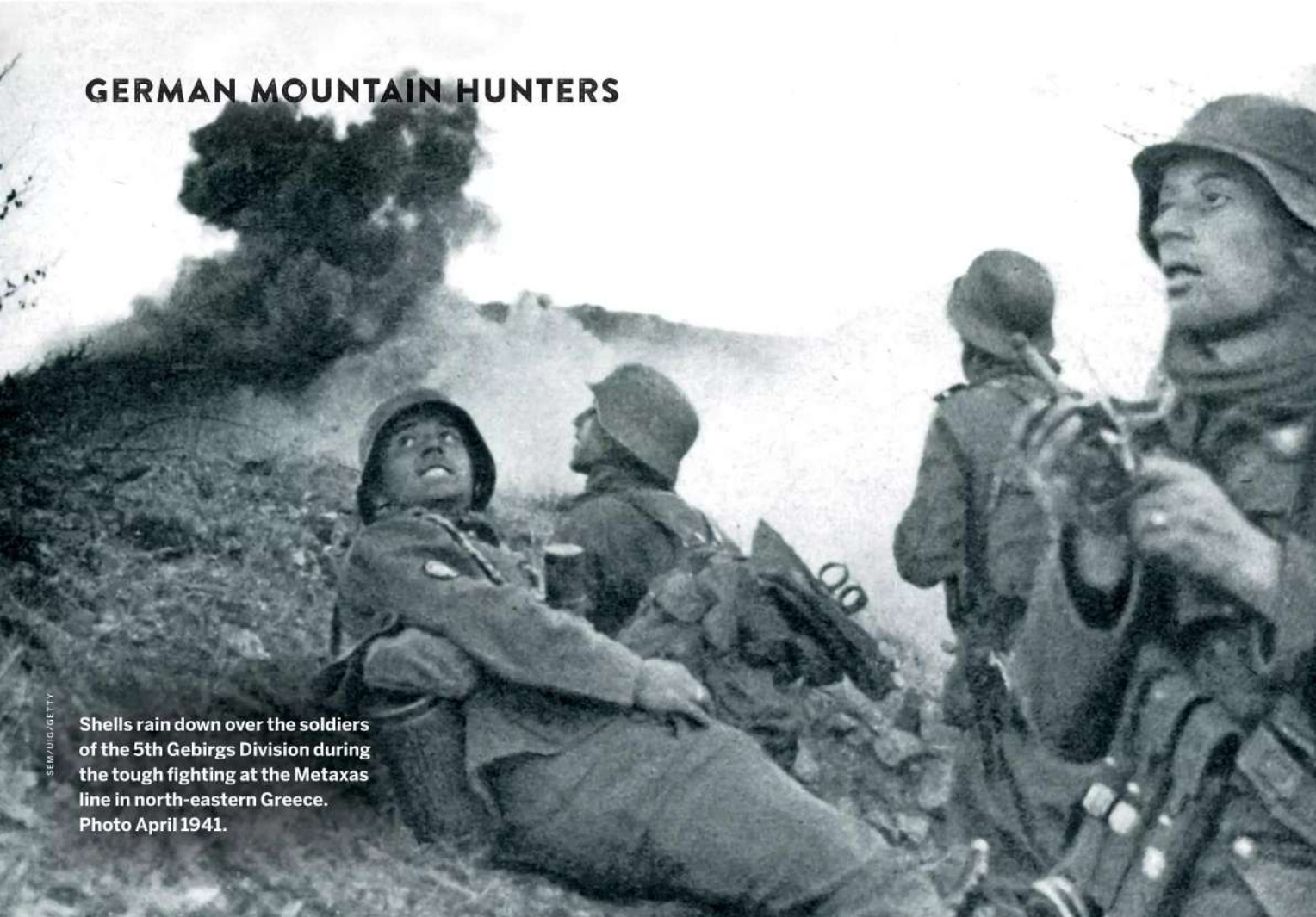


DPA/BL

**Mountain hunter with scimitar on his collar.**



## GERMAN MOUNTAIN HUNTERS



Shells rain down over the soldiers of the 5th Gebirgs Division during the tough fighting at the Metaxas line in north-eastern Greece. Photo April 1941.

► equipment. They didn't carry heavy weapons with which they could fight the enemy. Instead, Groth decided to try a bluff. Under the pretence of parlay, he approached the Russian cabin with a white flag, knocked on the door and announced he was planning a pincer attack against them. The surprised soldiers chose to retreat and leave the lodge to the mountain hunters.

**ON 21ST AUGUST** despite poor weather, the Gebirgsjäger climbed Elbrus' peak. They planted the Third Reich's war flag alongside divisional flags of the 1st and 4th Divisions in the harsh wind, but it proved impossible to photograph or film. They had to descend quickly. An extremely proud

Lanz praised his soldiers and officially asked for permission to rename Elbrus to Adolf-Hitler-Spitze.

**HITLER WAS NOT** impressed. On the contrary, according to Albert Speer's memoirs, he was furious with the "those crazy mountain climbers" who "belong before a court-martial". He wasn't interested in any symbolic victories. For him, the prize lay further ahead: the oil fields. The Gebirgsjäger's mission was to clear the way for the panzer troops, not waste time on some fool's errand. For Goebbels' ministry of Public Enlightenment and Propaganda, however, the climb was worth its weight in gold – but only if there were pictures to display. Some men from Groth's company were ordered to repeat the ascent as soon as the weather improved; only then did they discover that poor visibility had led them to mistakenly climb the lower of Elbrus's two peaks. That error was now corrected.

This time, pictures were taken, but they weren't good quality. A third expedition was duly sent off in early September, along with a professional photographer. The propaganda effect had finally been achieved.

The Gebirgsjäger had succeeded in capturing the most important mountain passages, but then

**“THE CAUCASUS BECAME THE HIGHLIGHT OF THE THIRD REICH, THE FURTHEST HITLER’S ARMY EVER REACHED”**



# Gebirgsjäger were guilty of war crimes

★ After the war – like with other parts of the German army – Gebirgsjäger did all they could to absolve themselves from any war crimes, pinning the blame on SS mountain hunters. On closer examination, however, this wasn't the case. The Gebirgs Divisions were actively involved in Nazi crimes from the opening exchanges of the war.

Here are some examples:

- During the invasion of Poland, mountain hunters shot captured civilians and any they suspected of being sharpshooters.
- In Narvik, Norwegian prisoners were used as human shields.
- During the occupation of Lviv in 1941, the local Ukrainian population was incited against the Jews.
- In Greece and in Yugoslavia (later also in Italy), mountain hunters routinely executed civilians as punishment for partisan attacks against German forces.

● In September 1943, over 5,000 Italian soldiers who surrendered on the island of Kefalonia were massacred.

Hubert Lanz was convicted of several of these crimes after the war. He led the 1st Gebirgs Division in Ukraine in 1941 and was the one who allowed the inhabitants of Lviv to carry out violent attacks on the Jewish population.

In September 1943 he also participated in the fight against Italian troops on the Greek islands, where he allowed the massacre.

During the Nuremberg Trials in 1947, Lanz was sentenced to 12 years' imprisonment for war crimes.



Hubert Lanz.

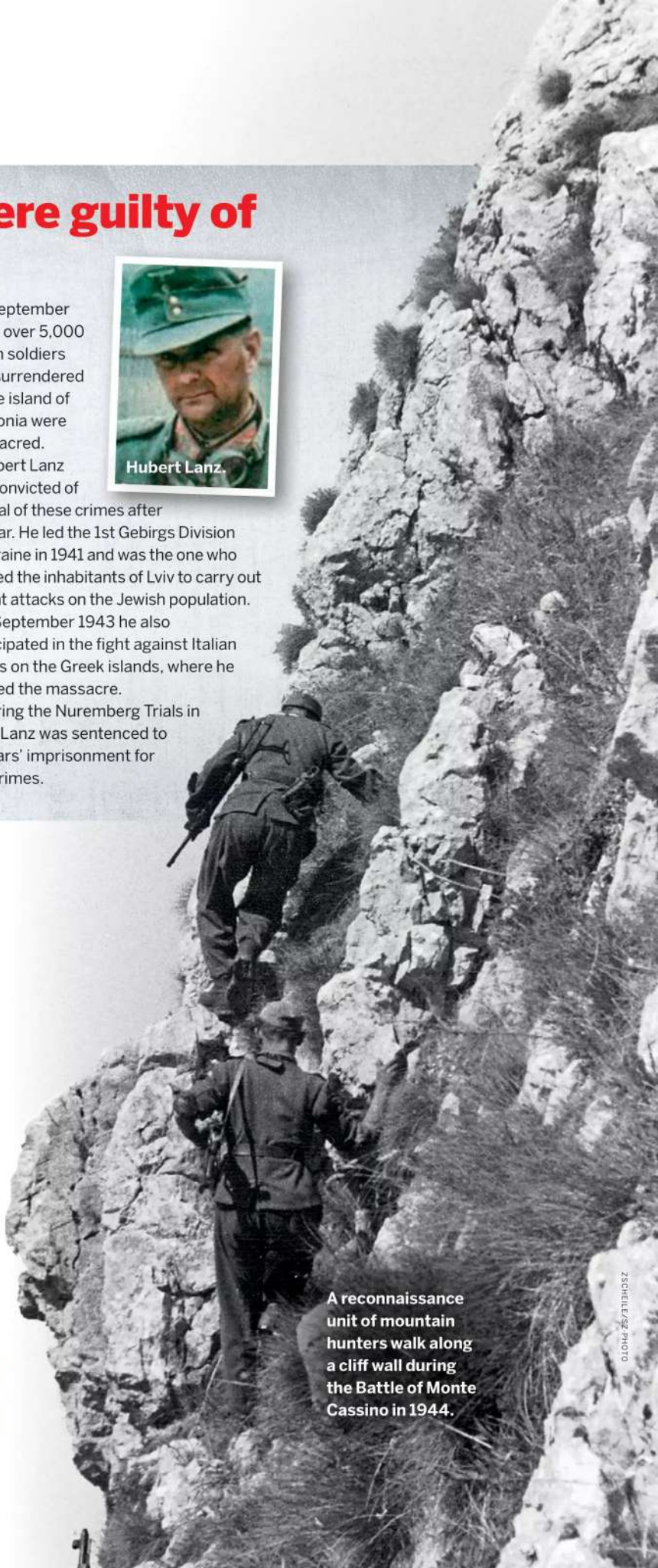
had to defend them against Soviet counterattacks. With the winter coming, the elements became their toughest adversary. It would be spring before any advance could continue.

There would be no more offensives, however. The 6th Army's encirclement in Stalingrad meant that Army Group A was in imminent danger of being cut off north of the Caucasus. A quick and total evacuation was initiated on 31st December.

The Caucasus became the highlight of the Third Reich, the furthest Hitler's army ever reached. However, the mountain hunters failed to overcome this final challenge before the strategic situation put an end to the attempt. The Swastika flag remained on Elbrus until 17th February 1943, when a group of Soviet mountaineers took it down. ❏

**Rasmus Kjærbye Petersen** is a writer specialising in military history.

**Further reading:** *Gebirgsjäger* (2015) by Ray Merriam • *The Mountain Troops of the Waffen SS 1941-1945* (2004) by Roland Kaltenecker.



A reconnaissance unit of mountain hunters walk along a cliff wall during the Battle of Monte Cassino in 1944.



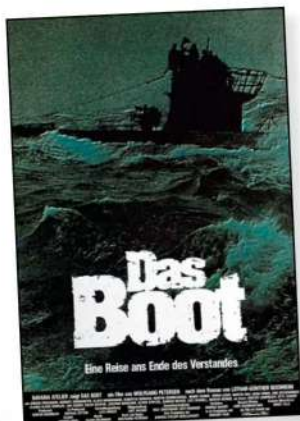
# The hard life in a **U-BOAT'S BELLY**

Text: RASMUS KJÆRBYE PETERSEN

**"THE STENCH WAS ONE  
OF THE THINGS THAT  
CHARACTERISED A  
GERMAN U-BOAT"**

ULLSTEIN/GETTY





A German poster.

Serving on a German **Type VII U-boat** was demanding. The crew was crowded into small spaces that smelled of oil and sweat. Life on board was depicted in the movie *Das Boot*. Here we tell the reality of day-to-day life – warts and all.



The real U 96, with the characteristic swordfish on its tower, leaves Sainte Nazaire on the French Atlantic coast in 1941. The captain is *Fregattenkapitän* – Captain – Heinrich Lehmann-Willenbrock who is wearing his white peaked uniform cap.



## U-BOAT VIIC

**T**he most common German submarine during World War II was the Type VII. With a total of 703 boats, it is the most common U-boat class ever built (and probably will ever be built).

Initially, the U-boat's limited range meant that it could only take on operations around the British Isles. But when France fell in 1940, it became possible for Karl Dönitz, Commander of Submarines, to send his entire fleet of Type VII into the Atlantic to target merchant vessels on the open seas. On Dönitz's order, several bases were built along the French coast, with large bunkers to protect the U-boats in port. Massive production started, mainly based on the modified variant VIIC.

Now the BdU – *Befehlshaber der U-Boote*, the term for both Dönitz and his headquarters – was ready to challenge the British convoys and the Royal Navy with their wolfpack tactics, their existing Type VII U-boats and, not least, their new generation of submarines.

**SERVING ON THE** Type VII had its hardships. It was built solely as an effective weapon, with no thought to the crew's comfort. Add in the brutal combat that was fought at sea, and it's a wonder that German U-boat crews endured.

When a U-boat left its base to start a patrol one of the first things the crew did was to stand down

**“DURING MOST OF THE OPERATION, ONE TOILET WAS PACKED FULL OF FOOD.”**



**U-Boot-Kriegsabzeichen – U-boat War Badge – was awarded to crews after two war patrols.**

from their usual strict uniform etiquette. The navy blue uniforms were set aside in favour of just about anything. A major benefit from the victory in France was the acquisition of all Allied military equipment. British khaki uniforms became popular everyday attire among the crew; others preferred civilian clothing – or even just their underwear.

The most important thing was that the clothes were comfortable. It wasn't possible to carry extra clothing as there was only limited space on board for personal effects. Clothes could not be washed on board, not even the only pair of 'skivvies' that the men had with them. Unsurprisingly, for practical reasons, the crew preferred black underwear.

The men could only wash in sea water with a special soap designed for the purpose. But the soap left a film on the skin and wasn't very popular. Many submariners chose to completely ignore their personal hygiene. The stench became one of the things that characterised a German U-boat. The fact that no one could shave during the voyage also contributed to U-boat crews standing out from other German combat units.

Life on board was defined partly by the constant, unchanging watch cycle, and partly by the physical limitations that prevailed in the cramped sub.

**AT THE FRONT** of the U-boat lay the *Bugraum* – Bow room. It was both a torpedo room and the crew's main quarters. There were around 27 crew members who shared the room, yet there were only 12 bunks – which sometimes had to be lifted to accommodate torpedoes. At the beginning of a patrol, the entire floor was packed with torpedoes and other equipment, covered by wooden boards. The men couldn't even stand upright. It was always a day for celebration when the first so-called “eels” (*Aale* in German) were fired.

When working with the torpedoes, all the bunks were stowed and the bow room turned into a workshop. The tubes were also maintained every four or five days. This routine provided an opportunity to drill the men in loading and emptying the four torpedo tubes. Responsibility for the torpedoes lay with a *obermechaniker* – torpedoman – and his mates. These specialists were the only petty officers who slept in the bow room.

The other men in the room were seamen and technicians, a group that made up the regular crew

**A U-boat veteran reports:**

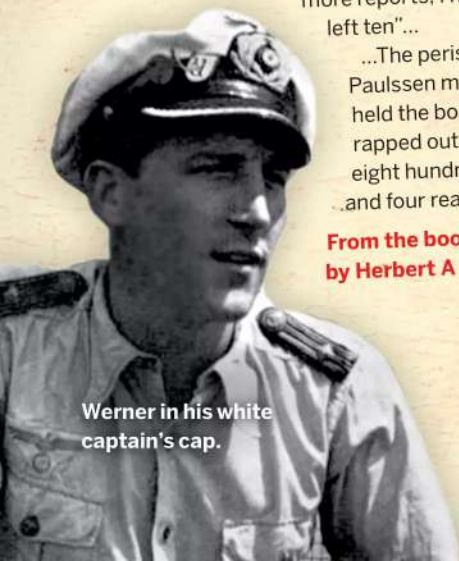
**“Prepare tubes three and four for firing fan shot”**

“Alarrmmmm! The dive went like clockwork.” The soundman reported, “Propeller noise in zero zero, getting louder fast.” “No more reports, I have her well covered.”

Paulssen, swinging himself onto the seat of the scope in the tower, gave his order: “Prepare tubes three and four for firing fan shot.” He took a sweep all around the boat, then advised, “No more reports, I have her well covered. Rudder left ten”...

...The periscope motor hummed continually. Paulssen manoeuvred into attack position, held the boat steady, reduced her speed, then rapped out his final orders: “Correct distance eight hundred, angle left thirty, tubes three and four ready — ready — fire!”

**From the book *Iron Coffins* by Herbert A Werner**



**Werner in his white captain's cap.**





A scene from *Das Boot* from 1981. The film is based on Lothar-Günther Buchheim's autobiographical novel and portrays a single voyage on U 96, Type VIIC, during WWII.

of the approximately 44 men on board. No one lived in luxury on a Type VII, but conditions in the bow room were the worst. In high seas, the rolling was more powerful there than in any other part of the boat. A man could easily be thrown from his bunk and end up in a lower bunk on the opposite side.

**LEADING OFF THE** bow room were the U-boat's two toilets, often referred to as "Tube 7". During most of the operation, one toilet was packed full of food. "Make it short!" was the sign on the door of the second toilet. At the beginning of the war, the toilet could only be flushed in shallow water, which became a problem when the U-boats spent more and more time underwater. Gradually, high-pressure toilets were developed that could be used at depths of more than 25 metres.

But these new "thunder boxes" were difficult to use. In fact, they were so complicated that only one officer or a fully-trained petty officer was allowed to dispose of the waste. If the wrong levers were pulled at the wrong time, the user was greeted by a jet of filthy water containing everything from the bowl. Admittedly, it gave the crew an opportunity to

avenge themselves on an unpopular officer, but there was nothing to joke about. At least one Type VIIC (U 1206) was lost due to misuse of the toilet.

**THE NEXT ROOM** was the senior officers' cabin. There, the U-boat's four officers had a private berth, the ultimate status symbol on a U-boat.

The highest-ranking officer was the *kapitänleutnant* – captain lieutenant or commanding officer (CO), who was usually also the eldest on board (often only 30 years old). The CO was responsible for navigation and also often had third watch on the bridge. Otherwise he stayed mostly in the U-boat's nerve centre, where he spent time updating maps.

The *obersteuermann* – navigator – was also responsible for managing the U-boat's supplies. The bow room wasn't the only place used to store provisions. Along almost the entire length of the boat, there was a temporary wooden deck with boxes of food and drink, lubricating oil and other things ►



U 96 was the 11th 'best' German U-boat during the war, with 27 Allied vessels sunk and another five hit. It was sunk by US bombers in Wilhelmshaven on 30th March, 1945.



A U-boat veteran reports:

## "For long hours I was awake"

"With the boat listing and swaying beneath me, I staggered into the chief petty officers' small wardroom where I had a tiny locker and a narrow upper bunk. I jackknifed up into the tight berth, closed the aluminium guard rail, and wedged myself between closet and wall. For long hours I was awake by the diesels' rhythmical knocking and the splashing of water against steel, and by my thoughts of sailing against the enemy."

Herbert A Werner

► that were needed in large quantities during patrols. It was not without reason that an experienced man like the navigator was responsible for all this. Weight distribution was of crucial importance for how the U-boat settled in the water, and he always had to be kept informed of any changes in the load.

Almost as important was the *oberbootsmann* – quartermaster. His responsibilities were smaller, but numerous, making him probably the busiest man on board. He oversaw the U-boat crew's well-being and was traditionally called "Number One". Responsibilities included cleaning the crew's clothing and equipment, as well as monitoring their overall health and discipline. The crews usually regarded him as a strict, but fair, father figure.

The last two chief petty officers were technicians. The *diesel obermaschinist* – diesel officer – took charge of the diesel engines and the *electro obermaschinist* – motor officer – was responsible for the electric motors. They reported to the *leitender ingenieur* (LI) – chief engineer – and spent almost all their time in the engine room.

**THE OFFICERS' CABIN** followed the chief petty officers' accommodation. There were sleeping quarters and an officers' mess for the U-boat's three lieutenants. The CO often ate with his lieutenants so that they could discuss different issues. But now and then he left them alone, giving the officers a chance to complain about him.

The most important officer was the chief engineer. He had an almost equal status to the CO and was ultimately responsible for the operation of what was a complex U-boat.

"The LI carried the commander on his shoulders," as one officer put it. "The cooperation between the two must be that of a good marriage."

Neither the commanding officer nor the chief engineer had fixed watches, but in return they had to be ready to act at just a few seconds' notice. It was the chief engineer who maintained the U-boat's mechanics, and he had to have a complete overview of the U-boat's weight distribution (which included

both provisions and crew movements) for it to work in the best possible way. It was considered that the LI had "a special sense which will enable him to anticipate the boat's every tendency to sink or to rise, because by the time these show up on instruments it is usually too late."

On paper, it was the *wachoffizier* – first watch officer (1WO) – who was the U-boat's second in command. He would take over if the CO was out of action. But before that happened, it was a foolish 1WO who considered himself superior to the LI.

The 1WO was responsible for the roster and, as the title suggests, took the first bridge watch. He also had responsibility for the boat's torpedoes.

The second watch officer (2WO) took the second watch and was also responsible for the U-boat's equipment. During the war's first years, a deck gun, which was under his command, was often used against individual ships. But over time, it was used so rarely that it was removed from later Type VII models. However, anti-aircraft guns became more important as the Allies gained air supremacy. He also oversaw the radio room crew and was responsible for the U-boat's Enigma machine.

**THE CO WAS** the only one on board a Type VII sub with his own cabin, but it was a small cubicle with a curtain. The cabin had a bunk, a wash basin and a table with log books, sealed orders and codebooks.

The commanding officer had usually taken staff officer training in specialist U-boat subjects between the ages of 25-30. His chief engineer freed him from the U-boat's day-to-day operations, so his primary focus was operational and tactical issues. BdU admittedly directed U-boat warfare from the shore, but it was the ship's CO who decided when and where his U-boat would be deployed.

Ultimate responsibility for the U-boat's victories and defeats, therefore, rested with him. "If a commander is successful, his crew will love him more, even if he is an idiot, than if he is not," U-boat captain Wolfgang Lüth put it in a speech to colleagues in 1943. The commanding officer should always be clearly visible and give the impression of having the situation under control. He always sported – whatever else he wore – his white peaked uniform cap, which made him easy to find. As a ship's captain said, "If you had the confidence of your crew, you were almost a god."

On the starboard side, opposite the captain's cabin, was the small radio room. Contact with the outside world was crucial for 'wolfpack' tactics, and when surfaced the radio was manned around the clock. At periscope depth, the U-boat could still receive signals, but once it dropped below 13 metres, the radio was unusable. The radio operators then manned the hydrophones instead, which they



The Kriegsmarine's badge sat above the peak of the officers' cap.





Officers dined together with regular crew on a German U-boat. Undated photo.

used to listen for enemy engine noise and other significant sounds. Listening was all they could do when the U-boat went below periscope depth.

At the beginning of the war, there were only two radiomen (an officer and a petty officer) who worked the radios, but when more advanced equipment – apparatus for radio bearing and advanced sonar equipment – was installed a third man was required. The radiomen not only followed everything that happened on the radio frequencies, but also heard what was said from the commanding

officer's cabin behind them. They were therefore a valued source of gossip and information among the other crew members. They also operated the U-boat's gramophone and speaker system. When U-boats patrolled off the US coast, the crew put the German songs to one side and tuned into American transmitters instead. Submariners loved jazz, no matter what the Nazi regime thought about it.

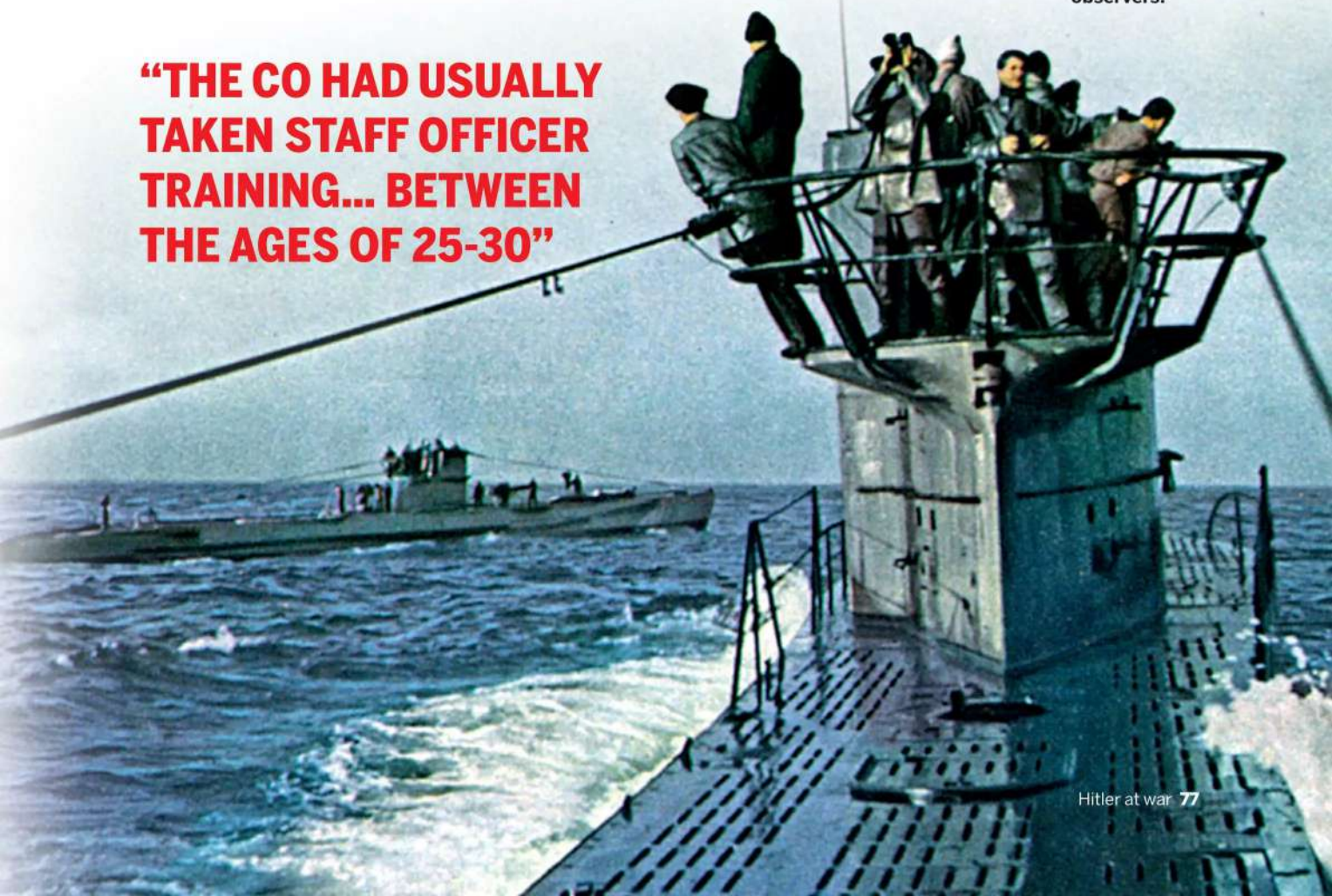
**IN THE MIDDLE** of the U-boat lay the very suitably named *Zentrale* – control room. It was basically an L-shaped bench on the starboard side, next to a round hatch in the bulkhead that led to the CO's cabin and radio room. Three helmsmen controlled the U-boat from this position. The first of them, who faced the bulkhead, was the *zentralemaat* – a petty officer who controlled the rudder and sat with a compass in front of him. He had to sit at his post around the clock, regardless of whether the U-boat was surfaced or submerged. He also managed the telegraphs, the handwheel for the primary ballast tank and the U-boat's ventilation system.

On the long side of the helm station, facing starboard, sat two *zentralegasten* – ordinary seamen who operated the forward and aft diving planes. These were only used in the submerged position,

Article continues on page 80 ►

When surfaced, the bridge was always manned by a watch officer and at least four lookouts, but in areas with many Allied aircraft there were often two extra observers.

**“THE CO HAD USUALLY TAKEN STAFF OFFICER TRAINING... BETWEEN THE AGES OF 25-30”**





# U-BOAT VIIC

The VIIC was the work horse of the German U-boat fleet. The model was the most common German U-boat during World War II – 568 VIIC subs were built.



The inside of the tower as seen from below: at the top is the tower hatch and, beneath it, a ladder leading down to the control room.



The 7.16-metre-long and 1.5-tonne-heavy torpedoes were lifted in through a hatch on deck.



**Bow room** There were 12 bunks for 27 seamen. The crew had to share the space with torpedoes and other equipment, which was also stored here. Picture from 21st May, 1943.



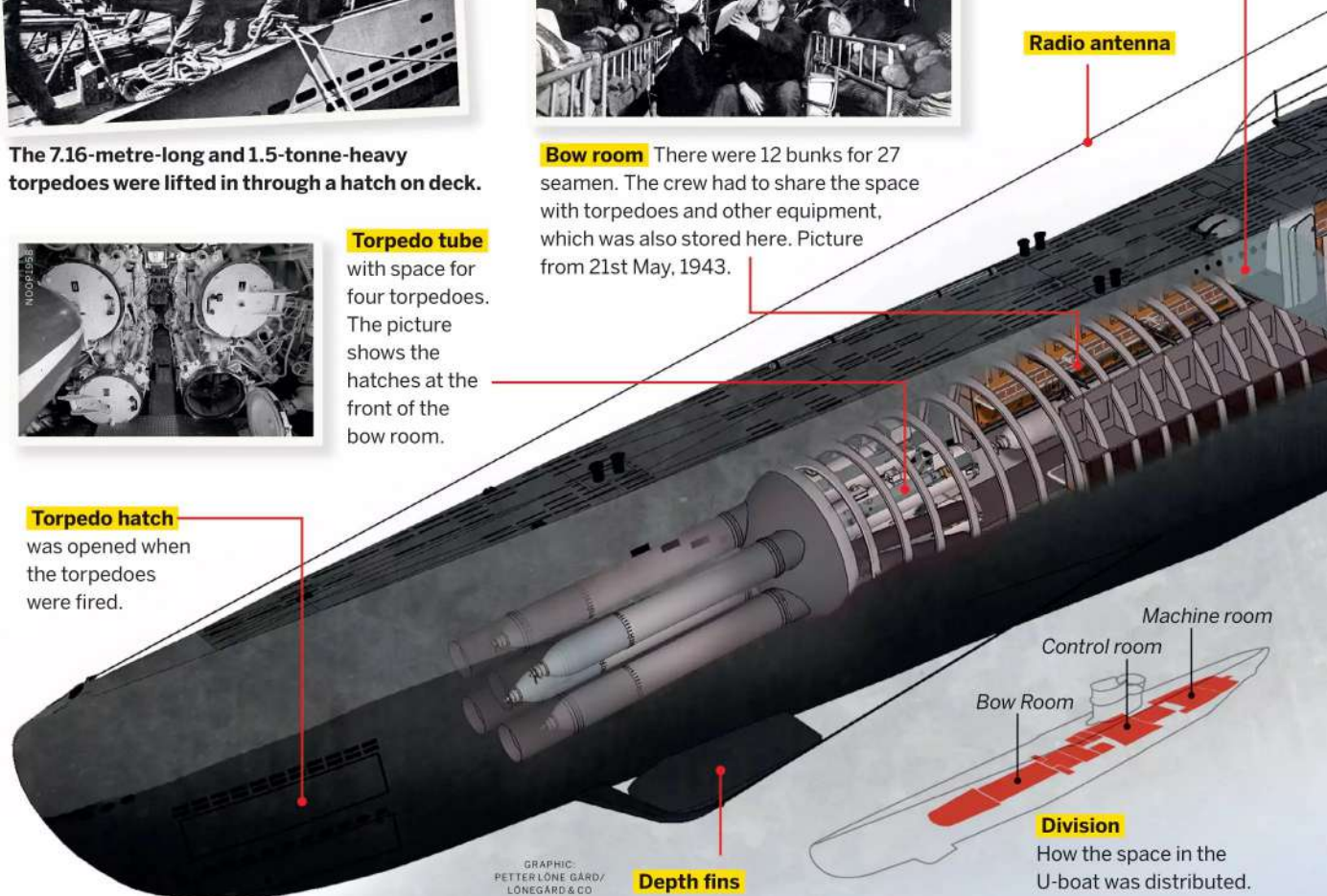
**Torpedo tube** with space for four torpedoes. The picture shows the hatches at the front of the bow room.

**Torpedo hatch** was opened when the torpedoes were fired.

## Provisions

Some food was also stowed in one of the toilets.

## Radio antenna



GRAPHIC: PETER LONE GARD / LONEGARD & CO

## Depth fins

## Machine room

## Control room

## Bow Room

## Division

How the space in the U-boat was distributed.

Crew 44–52 men

## 4 officers



**Commanding officer**, chief engineer, first and second watch

## 4 chief petty officers



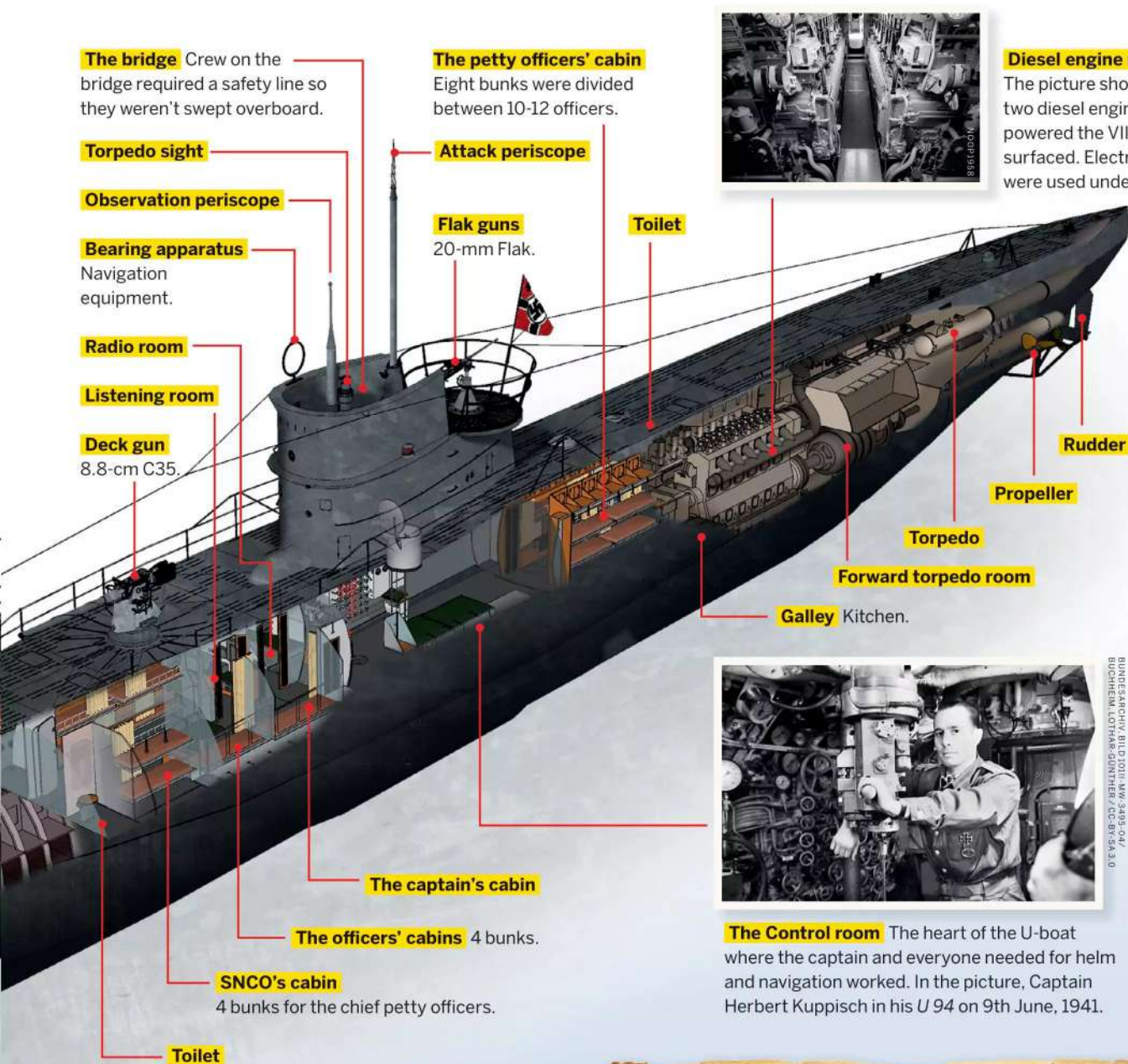
Watch officer, quartermaster, engineers (diesel + electric motor)

## 9–13 petty officers



Head bosun, bosun, mechanic (torpedo), 2 assistant mechanics (torpedo), 2–6 machinists, 2 radio operators.





**The Control room** The heart of the U-boat where the captain and everyone needed for helm and navigation worked. In the picture, Captain Herbert Kuppisch in his U 94 on 9th June, 1941.



The U-boat's pressure hull was divided into seven sections. This picture shows the hatch between the diesel engine room and the electric engine room.

27-35  
seamen



## SPECIFICATIONS

### Displacement:

Surface 761 tonnes, underwater 865 tonnes.

### Total length:

67.1 m, pressure hull 50.5 m.

**Overall width:** 6.2 tonnes, pressure hull 4.7 m.

**Max speed:** 17.6 knots (33 km/h) surfaced, 7.6 knots (14 km/h) underwater.

**Range:** Surfaced 12,000 km at 12 knots (22 km/h) speed,

Underwater 150 km at 4 knots (7 km/h) speed.

### Propulsion:

Surfaced 3,200 hp (2,400 kW), Underwater 750 hp (560 kW).

### Torpedoes:

14 torpedoes. (4 forward tubes and 1 aft tube).

### Armaments:

8.8-cm SK C/35-naval gun  
20-mm Flak 30 gun.

**Maximum dive depth:** 250 m.





Lying on the surface was dangerous as the U-boat could easily be attacked by aircraft. Here, a Type VIIC is attacked by British depth charges and machine guns. Picture from 10th March, 1944.

KESTON/GETTY

► and what usually happened was that these positions were manned by two men from the bridge watch when the U-boat dived. But in 'battle-ready' mode, the so-called *gefechtsrudergänger* – combat helmsmen – manned the hydroplane controls. As a rule, the chief engineer watched these two men like a hawk while keeping a watchful eye on the primary depth gauges situated here. He had his own station at the opposite end of the room (still on the starboard side). Here his desk bore his technical logbooks and on the wall several small handwheels were placed so he could fine-tune all the U-boat's ballast tanks.

The periscope was next to the helm station and was operated from the control room, which made it possible to track ships and aircraft while submerged and it could also be used by the duty officer to measure the height of the sun.

**THE ATTACK PERISCOPE** lay in the middle of the control room surrounded by various freestanding instruments, such as the large gyrocompass, which controlled the sub's other compasses. Behind the water unit a ladder led up to the conning tower.

The port side mainly held machinery, such as the pump for the large ballast tank under the control room floor, oxygen containers and a distillation apparatus that could produce fresh water for both crew and to replenish the electrolyte in batteries.

## "A LARGE WAVE COULD SWEEP THE ENTIRE CREW OVERBOARD"

Squeezed between all this was the navigator's small navigation table.

The control room was a buzz of activity. It was not helped by the fact that everyone had to go through the control room to get from the front to the back of the U-boat or vice versa.



Carl Zeiss binoculars were used during the bridge watch.

**ABOVE THE CONTROL** room was the U-boat's conning tower. The attack periscope was operated from inside the tower, and the top of the tower served as a bridge. During the most critical (and most dangerous) situations, there could be up to seven men on the bridge. Normally, there were four lookouts and a watch officer, but in areas where Allied planes patrolled closely, the commanding officer could order another two observers, so each had a smaller horizon to monitor. During the shift, the outgoing and incoming watches overlapped for about 15 minutes, until the latter's eyes had become accustomed to the light or darkness. It was a point of honour to arrive on time for a shift. Any failure here risked creating bad blood on board.



Bridge watch was dangerous for two reasons; first, one could easily be hit by enemy fire from planes, especially after Dönitz's order that German U-boats should remain surfaced and take on any aircraft; second, the tower was so low (so as not to be conspicuous) that it was regularly pounded by waves. A large wave could sweep the entire crew overboard. Basically, bridge watch was the time when the risk of injuries and death was greatest.

Nevertheless, the crew searched out the bridge even when they were not on duty. The CO spent most of his time here, and the navigator came up once a day to use the sextant. The bridge was also the only place on board where the crew could smoke, which meant that there was a system in place to ensure there were not too many on the bridge at the same time because it was important that an emergency dive could be instigated within 30 seconds.

Behind the control room was the petty officers' cabin. Like ordinary seamen, they also had to share bunks (eight berths for 10-12 men), but at least the bunks were fixed and the ceiling was higher. Here, however, it wasn't possible to perch on the edge of the bunk to play cards like the regular crew could. The narrow corridor between the bunks was far too busy. Frustrated petty officers gave the cabin names such as Leipziger Straße and Potsdamer Platz after busy streets in Germany.

**FOLLOWING ON FROM** this cabin, on the starboard side, was the boat's second toilet, and on the port side, a small galley. Here the sub's cook (known as "Smutje") worked on a 70 x 150 cm surface. The chef had a small stove with three or four hotplates, an oven, a soup pot and a sink. As compensation for the wretched conditions on board, Dönitz decided that his crews would enjoy better food than any other soldier in the Wehrmacht. Therefore, Smutje had usually been either a baker or a chef in civilian life, and he received the best ingredients to work with. The result was that many U-boat crews actually put on weight when they were out at sea.

In rough seas it was often impossible for Smutje to cook hot food, however. Then the crew had to settle for sandwiches. That said, the pervading stench and galley's proximity to the engine room often left the food tasting mostly of diesel, which ruined Dönitz's good intentions.

The engine room, which was behind the galley, was a separate world. Things were done differently here. There were two guards instead of three, a starboard and a port guard, both of whom had six-hour-long shifts instead of four (unless the chief engineer decided otherwise). In return, the engineers were let off watch duty on the bridge, so they only appeared on deck when they were



UULSTEN/BL

smoking. It contributed to their reputation as cavemen who kept themselves to themselves.

Duty in the engine room was no joke. The air was dirty, the noise infernal (when both diesel engines were running) and the temperature was normally around 28-30 degrees Centigrade, and in tropical waters up to 40 degrees. Then the engine watch was shortened to four hours so the men didn't black out or experience heat stroke.

**THE ENGINE ROOM** was divided into two chambers. In the front were the two diesel engines, which powered the electric motors in the next room. These drove the propellers and supplied the batteries under the floor of the cabins with electricity. A single diesel engine could drive both electric motors, so if necessary one engine could keep running while the other cooled down or underwent maintenance.

The diesel engines took their oxygen from the air inside the U-boat. Therefore, the tower hatch had to be open while the engines were running, to allow fresh air to flow in. During emergency dives, ►

**The bridge was a dangerous place to be in heavy seas. Safety lines were used so no one was swept overboard. Here, one of the crew works on the bridge during bad weather in April 1943.**

**A U-boat veteran reports:**

## "U-230 tumbled to 250 metres"

"A new series of exploding charges lifted our stern with a mighty force. Our boat, entirely out of control, was catapulted toward the bottom five miles below. Tilted at an angle of 60 degrees, U-230 tumbled to 250 metres before Friedrich was able to reverse her fall. Floating level at a depth of 230 metres, we thought we were well below the range of the enemy's depth charges. U-230 was speedily rigged to withstand pursuit. Once again we were condemned to sit it out in crushing depths."

**Herbert A Werner**



## U-BOAT VIIC

- engineers had to switch to electric propulsion within a few seconds. This became a problem as Allied aircraft made it more dangerous for the U-boats to lie on the surface. So, towards the end of the war, *schnorchels* – submarine snorkels – were installed on all U-boats.

**THE SNORKEL MADE** it possible to keep the diesel engines running at periscope depth, but this created other problems. When a wave washed over it, the snorkel's valves automatically closed. If the engines weren't immediately shut off, it could cause such a rapid drop in pressure that the crews' eardrums burst. It was, however, a cheap price to pay to escape the constant threat from the air and the dangerous watch cycle on the bridge.

Engineers had to make sure that the engines worked in the case of attacks by depth charges. Their improvisation when lacking spare parts was outstanding. On board *U 124*, for example, it was possible to make new ball bearings for a diesel engine from the foil from cigarette packets.

The U-boat's rear torpedo tube was located at the back of the engine room. It was possible to reload the rear tube once, but it was mainly intended for emergency use – for example, if an enemy destroyer suddenly appeared in the U-boat's wake.

When an enemy was spotted, the U-boat went immediately into combat readiness. This meant that all regular routines were suspended. If a destroyer discovered the U-boat, it made an emergency dive and tried to get away. Or the U-boat could attack

## “ONE COULD EXPECT A RESPONSE AFTER LAUNCHING AN ATTACK”

if the commanding officer thought they'd not been detected. If it was a civilian ship that sailed alone, the U-boat attacked on its own, often with the deck gun and – at least at the beginning of the war – in accordance with international law. If it was a convoy, things became more complicated.

The U-boat's main task was to report the convoy to BdU. Then communication should be left open to provide ongoing updates while BdU ordered other subs to the location. This posed a huge risk, as Allied escort ships eventually became wise to German radio signals.

**AN ATTACK BEGAN** once the wolfpacks gathered. Dönitz had instructed his ships' commanders to sneak into the convoy under the cover of darkness and fire torpedoes from a surface position of 600 metres. The IWO aimed the torpedo from the bridge giving distances and directions to the target, which were then passed down to the quartermaster in the tower who fed then into the U-boat's systems to calculate the torpedo's gyro angle.

The commanding officer kept lookout and scouted new targets or threats. After prepping the torpedoes, the order was given to “Go!” whereupon the torpedoman in the bow room launched them – once clear of the tube, the torpedo powered itself using compressed air to reach its target.

However, as the war continued, this aggressive tactic became increasingly risky. It was therefore decided to fire more sophisticated (and in some cases homing) torpedoes while underwater, often at



**A VIIC returns to a base with protective bunkers on the Atlantic coast in 1942.**

## Sailors and technicians on board

★ The crew of a German U-boat was divided into two groups: sailors and technicians. The sailors were given a classic maritime training while the technicians were specially-trained experts.

Traditionally, sailors came from families with roots in sea shipping. There was, therefore, a great predominance of men from northern Germany,

especially from the ancient Hanseatic cities, which was reflected in the habits on board. For example, officers often greeted each other with “Moin-Moin” instead of “Guten Tag” when there was a changeover on the bridge.

Technicians had often worked in civilian industries with a professional

background. Consequently, many came from industrial areas in central Germany.

There were not many farmer's sons or Prussian Junkers on the U-boats, which made the crews more likely to be kindred spirits.

This added to their good camaraderie, both during and after the war.

**Kriegsmarine seaman's cap.**







**Commander of German submarines Karl Dönitz welcomes a U-boat crew – unshaven after a long time at sea – back to Wilhelmshaven in March 1940.**

a distance of greater than one kilometre. The CO set the distance and the direction, as the conning tower only had room for one man at the attack periscope.

One could expect a response after launching an attack. The likelihood that the U-boat had avoided discovery was minimal, so the enemy's escort ships started an intense pursuit. At the beginning of the war, the primitive British sonar ASDIC found only one in ten U-boats when underwater, but it was unnerving enough to hear their sound waves hit the hull. When the Allies started using hydrophones, which forced the U-boat to flee on electric power to avoid being heard, they were much more effective.

The silence could suddenly be broken by violent tremors from depth charges that the Allies dropped more or less at random. The pressure wave from one depth charge could produce cracks in the hull from several metres away. Most U-boats were lost after suffering a series of minor, but ultimately fatal, injuries from multiple depth charges detonating from even further away.

**THE CHIEF ENGINEER** was responsible for all repairs during an attack. The U-boat commander's task (in addition to manoeuvring the boat) was to demonstrate a stoic calm, so that the crew didn't panic. Sometimes he found telling a funny story or sitting down to read a good book helped.

Often the U-boat was able to shake off the enemy. But 264 U-boats did not survive their encounter with enemy ships during the war. Another 250 U-boats were sunk by aircraft (37 by ships and aircraft operating in tandem) while 124 were destroyed by

mines and bombings while they were in port – or for other unknown reasons.

After completing a mission, the U-boat returned to its base in France. At the beginning of the war, the U-boats were often greeted by Dönitz himself, who showered them with praise and awarded medals to the crews who had sunk the most ships. However, they did not escape criticism if they had not lived up to his expectations.

In the second half of the war the Allies had broken the Enigma code and could manoeuvre convoys around most of the wolfpacks. There were planes and submarine hunters everywhere, and a U-boat's voyage could be awful even if it did not find a single convoy. So BdU began distributing honours for the mere effort, not the number of ships sunk.

At least the crew had a few months off while the U-boat was being repaired. Some were replaced when experienced men transferred to other U-boats. With Dönitz's blessing and the military police's understanding, the rest were given space to let off steam after their ordeals. They always had to be ready to go back to sea – until the last day of the war. By that time, the Type VII had long become obsolete, and the Germans lagged far behind the Allied superpowers both at sea and in the air. 🇩🇪

**Rasmus Kjørbye Petersen** is a writer of military history.

**Further reading:** *Neither Sharks Nor Wolves* (1999) by Timothy Mulligan • *Hitler's Navy* (2009) by Jak P. Mallmann Showell.

## ★ FACTS

### A day on a German U-boat

- 00.00** \* First sea watch (1WO) and starboard engine room watch on duty.
- 04.00** Second watch (2WO) on duty.
- 05.45** Breakfast for port engine room watch.
- 06.00** Portside engine room watch on duty. The crew is woken.
- 06.30** Breakfast for the crew.
- 07.00** Cleaning duties for off-duty crew members.
- 08.00** Third sea watch (NCO or possibly an officer trainee) on duty.
- 08.45** Assigned work for off-duty watches.
- 12.00** First sea watch and starboard engine room watch on duty.
- 13.00** Assigned work for off-duty watches.
- 16.00** Second sea watch on duty.
- 17.15** Evening meal for the crew.
- 18.00** Portside engine room watch on duty.
- 20.00** Third sea watch on duty.
- 21.00** Lights out for off-duty crew.
- 23.40** First sea watch and starboard engine room watch is woken.

\* All times Were German time, wherever the U-boat found itself.



# StuG III

## THE INFANTRY'S BEST FRIEND

The assault gun **Sturmgeschütz's** mission was to support the German infantry during attacks. Introduced by Erich von Manstein, StuG showed its ability both in France in 1940 and during Operation Barbarossa. Soon it took up the fight against the Soviet T-34.

Text: **HARALD SONESSON**





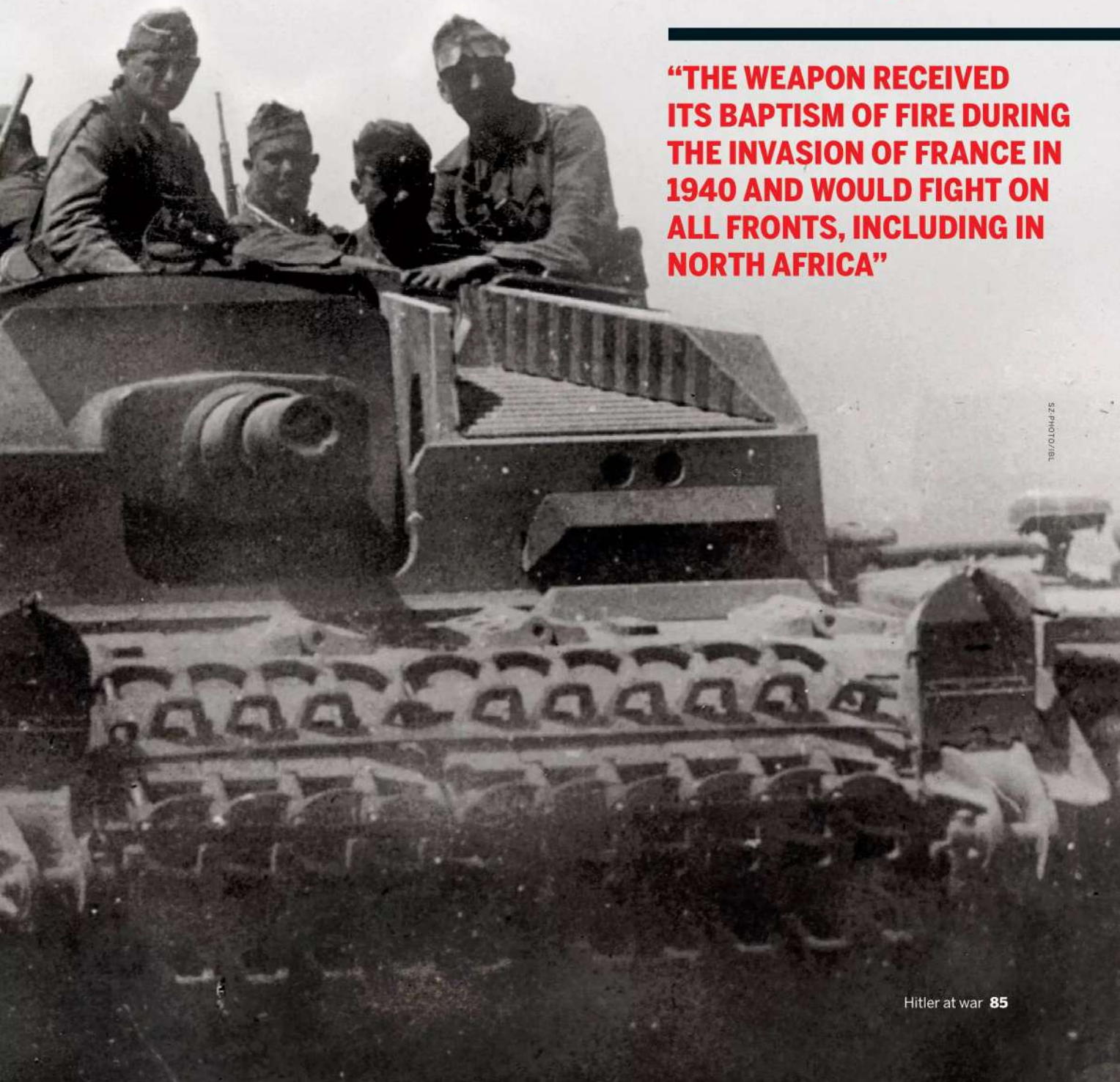
**T**he German self-propelled assault gun Sturmgeschütz (StuG) III is perhaps less well known than the Panzer V Panther or Panzer VI Tiger tanks. But the StuG was the most widely produced armoured vehicle with a gun barrel in the German army during World War II. The weapon received its baptism of fire during the invasion of France in 1940 and would fight on all fronts, including in North Africa. Initially equipped with a short-barrel 7.5-cm gun intended for close infantry support, the vehicle was developed into a potent

assault vehicle with a long 3.2m-barrelled 7.5-cm KwK 40 gun. Yet, it remained capable of performing its primary role of supporting the infantry. The turretless construction limited the gun's movement, which made extra demands on the crew's ability to function as a team. Many well-known tank officers began their career in a StuG, and it was perhaps because they understood just how important it was to work cooperatively that made them famous.

**THE IDEA OF** developing an armoured off-road lightweight artillery platform for close infantry ►

**Picture:**  
German  
infantry use  
Sturmgeschütz  
III as a means  
of transport  
at the start  
of Operation  
Barbarossa.  
June 1941.

**“THE WEAPON RECEIVED  
ITS BAPTISM OF FIRE DURING  
THE INVASION OF FRANCE IN  
1940 AND WOULD FIGHT ON  
ALL FRONTS, INCLUDING IN  
NORTH AFRICA”**



52 PHOTO/BL



# STUG III

► support in battle was originally hatched in the *Reichswehr* – the German armed forces after World War I. In 1923, the Allied Commission concluded that Germany could produce tractors to meet its agricultural and private-sector needs, but not for military use. Nevertheless, the *Reichswehr* accessed vehicles that could be used for training and development of various types of off-road vehicles. The political and economic conditions, however, meant that the pace of development was quite slow until Adolf Hitler's takeover in 1933.

Erich von Manstein presented a proposal in 1935 that laid the foundation for the concept behind *Sturmgeschütz*. His superior, General Ludwig Beck, then chief of the General Staff, had opposed the creation of armoured divisions and believed that, at least initially, they should develop tanks to support the infantry divisions. Manstein suggested that armoured tracked vehicles for close infantry support in battles should be assigned to infantry divisions. In this way, they could avoid the need for larger and more expensive tanks to provide close infantry support. However, they were still constrained by the armaments industry's limited capacity to develop and produce combat vehicles.

**THE FORMAL TASK** to develop the new vehicle was given to *Heereswaffenamt* – the German Army Weapons Agency, on 15th June, 1936. Its specifications included:

- The weapon should be a gun with a minimum calibre of 7.5 cm and with a firing range of at least 6 km.
- The gun should be able to penetrate all of the currently known tanks within a 500-metre range (which in practice meant French 40-mm tanks).
- There should be armour protection all around, but at the same time the vehicle should be open-topped (this was changed in 1939 to match the requirement for contemporary tanks). The front of the superstructure had to withstand hits from 2-cm armour-piercing ammunition. The other panels had to withstand 7.92 mm.
- The height of the vehicle should not exceed that of a standing soldier.

Daimler-Benz was tasked with developing the vehicle – it had already been awarded the prestigious



**The final assembly of StuG III version G and StuH 42 at the Alkett factory in Berlin in June 1943. The fourth vehicle from the right and the one on the left are StuH 42s.**



**Erich von Manstein.**

job of developing the *Panzer Kampfwagen III* tank, on which the new vehicle was based. Krupp was commissioned to produce the guns. The five ordered prototypes (0 series) were delivered in 1938 and were used for evaluation and development of combat techniques and tactics at *Artillerie-Lehr-Regiment* – the Artillery Demonstration Regiment – in Gothenburg.

The early regulations made it clear that StuG III was an assault weapon and that its main task was to support the infantry during an attack. It provided support – both moral and physical – to the infantry, but in turn they were expected to protect it too, because the StuG III lacked its own close protection. Its primary targets were heavier weapons that could not be fought by any other means. Tanks were only fired on in self-defence. Although StuGs could deliver indirect fire, its primary role as a close-support weapon meant it was rarely part of the division's indirect fire strategy.

A new regulation in 1942, after the introduction of a longer-barrelled 7.5-cm gun with better armour-piercing ability, stated that StuG could be used against armoured vehicles as well as light and medium-heavy tanks.

**AFTER A THOROUGH** evaluation of the five prototypes in the 0 series, the first production series of 30 *Ausführung A* was ordered from Daimler-Benz. Deliveries began in December 1939, with the last delivery the following May.

By November 1939 *Sturmabatterie 640* was set up as the first of its kind. On 8th April 1940, Batteries 659 and 660 followed, and on 9th May, Battery 665. These four batteries were the only ones that would participate during the invasion of France, which started on 10th May. Each battery was organised with a headquarters and three platoons, or troops.

**“THE GUN SHOULD BE ABLE TO PENETRATE ALL OF THE CURRENTLY KNOWN TANKS WITHIN A 500-METRE RANGE”**



StuG III G with 7.5-cm StuK40 L/48. The picture shows a battalion command vehicle on the Eastern Front in the spring of 1943. Note the loader at his MG 34, the extra track links that provided additional protection as well as the chains at the rear that were used to improve grip if the carriage got stuck.



Each troop consisted of two StuG, an armoured half-track for the troop commander and two armoured half-tracks designed for transporting ammunition.

Sturmabatterie 660 had its first taste of action when it supported the German 3rd Infantry Division as it crossed the River Meuse. Clustered near the river bank, the battery's six StuGs knocked out the defenders' positions on the far side of the river. Then they fired smoke grenades to blind the enemy so that the infantry could cross the Meuse.

The infantrymen were thrilled with the support, and a battalion commander, who later received the Knight's Cross for the successful operation, later commented that he did not believe that crossing the river and attacking the enemy defence line could have succeeded without the support of StuG.

**NEW UNITS WERE** set up as more and more StuG were delivered. In August 1940, new levels of battalion were introduced, with three Sturm batteries in a Sturmgeschützabteilung. In May 1941, each battery was assigned a seventh StuG intended for the battery commander. Few batteries, however, received the extra combat vehicle before Operation Barbarossa started on 22nd June. Most of the approximately 380 StuG delivered at that

time belonged to *heerestruppen* – independent battalions. These were temporarily subject to, for example, an infantry or armoured division. A few prestigious groups also had StuG units enter their organisational structure.

From the spring of 1943, several more StuGs were added, so that the batteries – at least in theory – received ten assault guns each. After this, a battalion could consist of up to 31 StuGs. Prior to Operation Citadel, the Battle of Kursk in July 1943, 727 StuGs were deployed to over 26 Sturmgeschütz battalions.

Article continues on page 90 ►



BUNDESARCHIV, BILD 101:185-0137-14A

The StuG III was built on the same chassis as the Panzer III. Here's a command tank, the Panzer III Ausf H, in Yugoslavia in the spring of 1941.



# StuG III

The StuG III assault gun and (later) tank destroyer was the German gun-equipped combat vehicle produced in the greatest numbers during World War II, a total of 9,409 units.

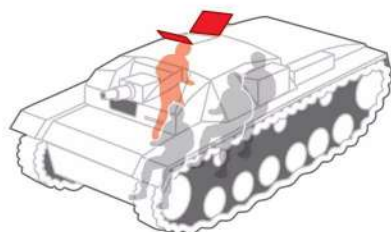
## FACTS ★ StuG III's development



● 35  
Number produced

### VERSION A

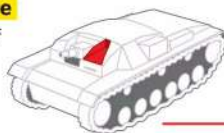
Five test vehicles are delivered in 1938. The superstructure has 50-mm armour-plating in front, 30 + 9 mm on the sides. The gun is a 7.5-cm StuK 37 L/24.



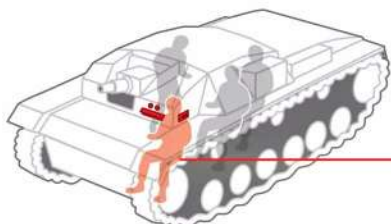
**Loader** Worked standing to the right of the gun. He could only observe through the hatch in the roof.

### Sight opening for direct fire

Anti-splash ribbing in front of the sight aperture to stop fire from outside.



**Ammunition** Space in ammunition boxes and storage for 44 shells (54 from model G).



**The driver** had a forward view through a double periscope or a cupola where a shield could be fitted for protection. There was also a shield on the left.

**The vehicle on the right** is a model B, an early version of StuG. It was handed to Sturmgeschützabteilung 191 in October 1940 and was used in battles on the Eastern Front in 1941.

### Observation hatch

A similar one is found on the gunner's side (hidden in the illustration).

### Gun

7.5-cm StuK 37 L/24. Primarily intended as support for infantry using explosive shells.

**Shield** Protected the weak point behind the gun.

### Gun elevation hand wheel

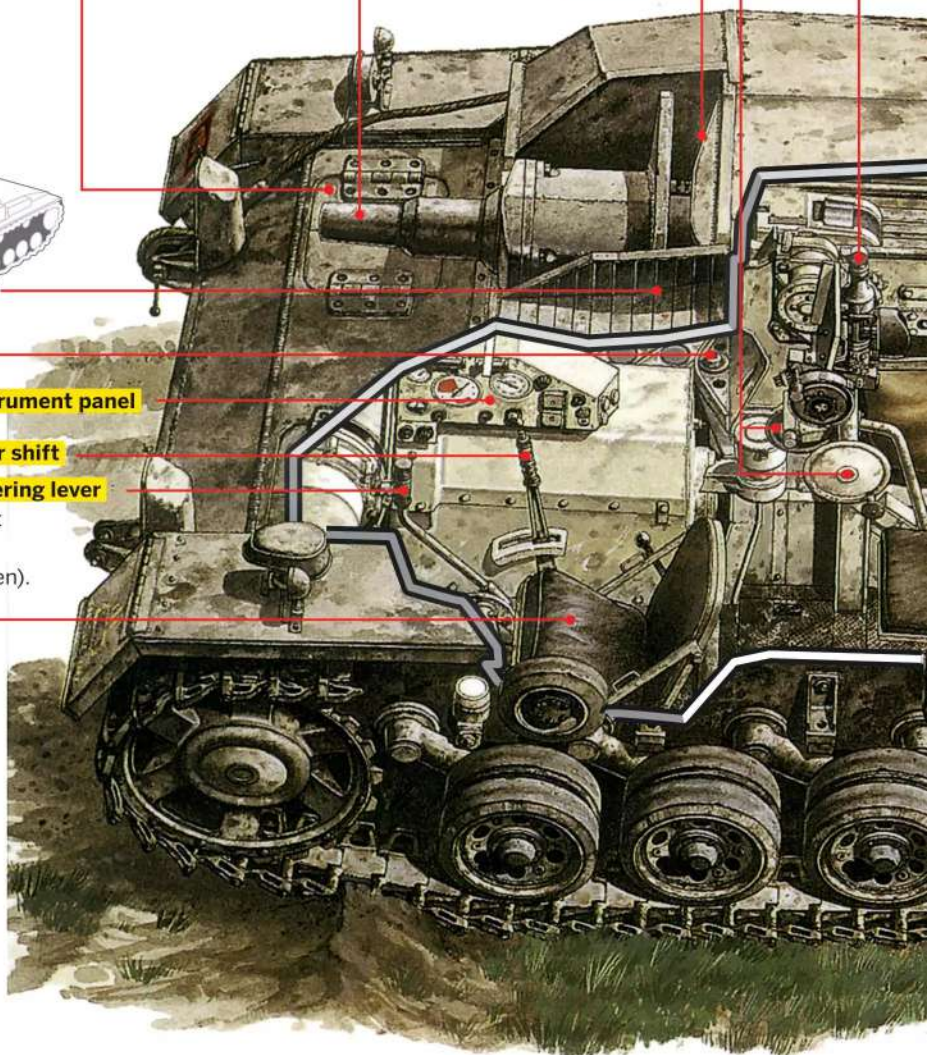
### Sight Rblf32

### Instrument panel

### Gear shift

### Steering lever

Right (left hidden).





320

**VERSION B**

Wider tracks are introduced. First delivered in June 1940.

(C, D, E)

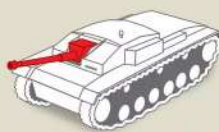
472

**VERSION C (D, E)**

New armour protection in front of gunner. Improved periscope. First delivery May 1941. From version E a moveable MG 34 is included.

(F, F/8)

694

**VERSION F (F/8)**

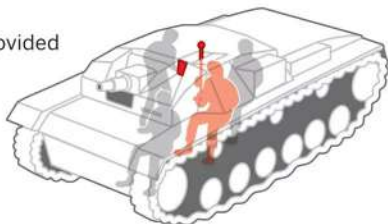
Receives the longer 7.5-cm StuK 40 L/43. First delivery March 1942. F/8 gets L/48 and additional 30-mm plating from September 1942.

Number  
produced:  
7893

**VERSION G**

Armed with MG 34. Carriage commander's hatch with periscope. First delivery in 1942. New shield, side armour and cement protection 1943.

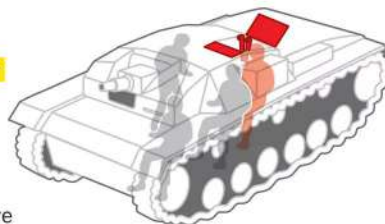
**Gunsight** The Sfl.ZF1/a gunsight provided both support for direct fire (through the sight opening) and indirect fire (through an aperture in the roof).



**Loader hatch for entry/exit**

**Vehicle commander**

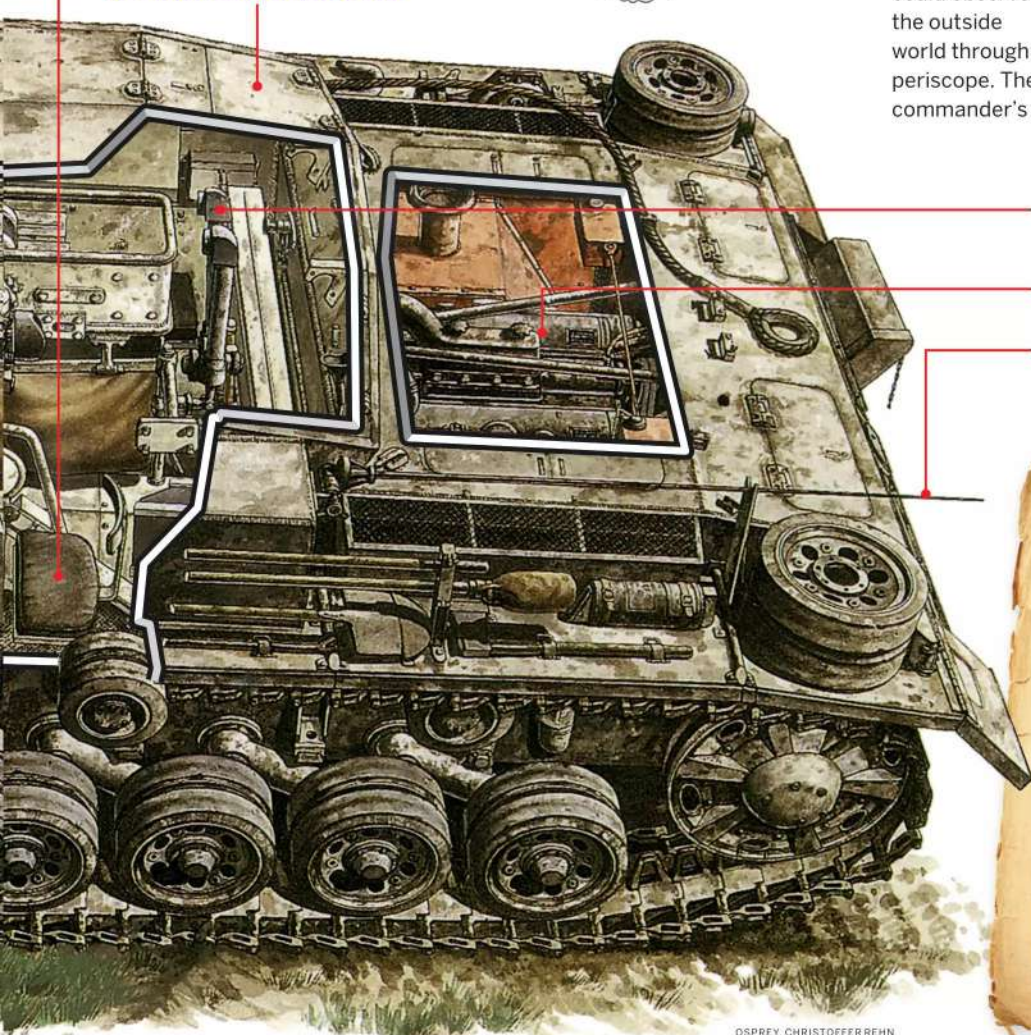
(His space is hidden in the main drawing) could observe the outside world through the hatch in the roof or through the periscope. The model G added periscopes to the commander's cupola.



**Periscope**

**Engine**

**Antenna** Radio for both transmitting and receiving messages was added to all vehicles from spring 1941.

**Version B**

**Length:** 5.4 m.

**Width:** 2.92 m.

**Height:** 1.95 m.

**Weight equipped:** 20.7 tonnes.

**Maximum speed:** 40 km/h.

**Armour (enclosure):** 50 mm (front) and 30 + 8 mm (side).

**Armour (chassis):** 50 mm (front) and 30 mm (side).

**Armament:** StuK37 L/24.

**Engine:** V12 Maybach 12-litre, 300-hp petrol engine.

**Gearbox:** 6 forward, 1 reverse.

**Range:** 155 km road, 95 km terrain.

OSPREY, CHRISTOPHER REHN

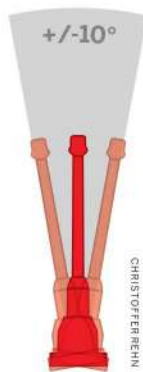


# STUG III

- “The Sturmgeschütz has very likely become the most valued weapon this summer,” reported one Sturmgeschütz-Ersatz commander. “Every infantry commander speaks with enthusiasm about and recognises the capabilities of the Sturmartillerie. Aside from defending against enemy infantry assaults, the Sturmartillerie can claim a large portion of the high number of enemy tanks destroyed.” The tanks, however, had superior manoeuvrability. In February 1944, the battalions were renamed brigades without changing their organisational structure or equipment. The reason was that military command wanted to avoid any confusion with those battalions using StuG that were attached to the *Panzerjäger* – anti-tank – battalions in the infantry divisions.

From 1943, StuGs were also incorporated into tank divisions. Some battalions were equipped exclusively with StuGs while others were a mixture of StuG and tank companies.

Each StuG had a crew of four men: commander, gunner, loader and driver. The driver sat on the far



The long-barrelled L/43 and L/48 guns could traverse  $\pm 10^\circ$  horizontally; the short-barrelled L/24  $\pm 12^\circ$ .

left. The gunner sat behind, a little higher up, with the commander behind him. The loader's place was to the right of the ammunition bins.

At first, StuG commanders didn't enjoy the same opportunities for long-range observation as found in tanks. There was a two-piece hatch on the hull's roof that could be folded up, but the only way to observe through it without raising your head above the hull was through the scissors periscope (a stereoscopic periscope). In the final version, Ausführung G, an observation mechanism with periscope was added.

The commander's seat could be raised and lowered, which meant that he could adjust his height depending on how he wanted to observe the terrain. Within the chassis, the crew communicated by a loud speaker to the left of the loader and via a voice tube to the driver. Later, a buzzer was mounted by the driver, and an intercom system was introduced, the same as found in contemporary tanks.

Initially, only vehicles intended for platoon and company commanders were fitted with a radio for both transmitting and receiving. Other StuGs only had receivers. From spring 1941, however, radio was introduced in all StuG assault guns for two-way communication.

**THE GUNNER'S PERISCOPE** was primarily intended to aid indirect fire. Here, the sight was raised up through a hatch in the roof. The sight could also be used for direct fire – although it was not as good as the gun's own sight. In both cases, the gunner opened a hatch in front of him and aimed directly at the target.

In May 1941, when 350 Ausf A and B StuGs had been produced, the hatch in front of the gunner was removed, replaced by one that could provide the same level of provision for direct fire as found in contemporary tanks, while also continuing to support indirect fire. The new sight stuck out through a hatch in the roof. Right behind was the gunner's hatch so he could get in and out.

The guns were set by hand and fired electrically by pressing a button on the side of the steering brake.

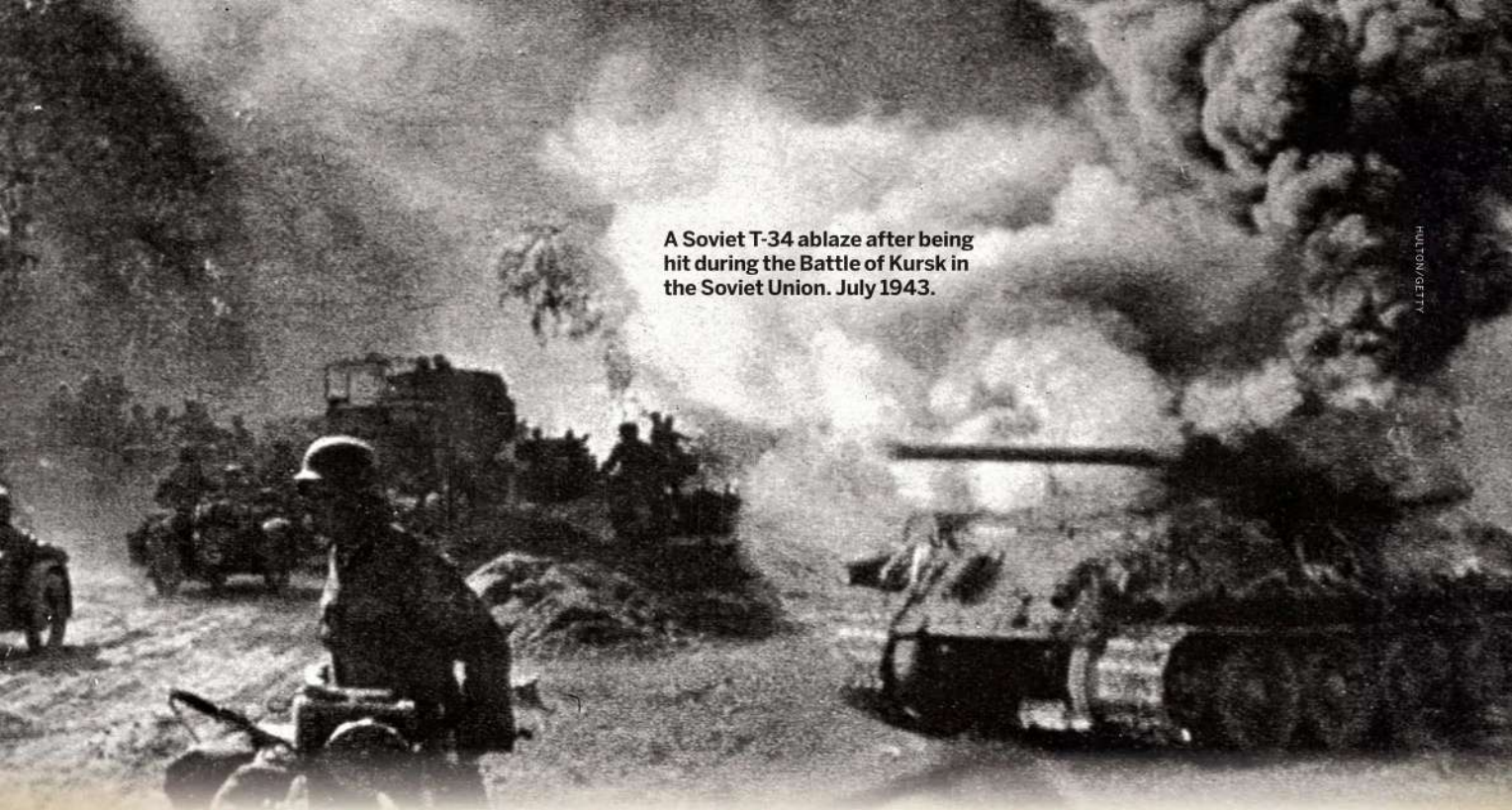
The gun could only be fired when the vehicle was still. There was limited horizontal traverse on the gun, meaning the entire weapon had to be swung if the target was to the side or rear. It required a high degree of coordination between the commander, driver and gunner. ►

The commander of a StuG III version F with the periscope up. In front of his hatch, the upper part of the gunner's periscope can be seen. The Soviet Union 1942.



**“THE TANK COMMANDER INITIALLY HAD NO OBSERVATION HATCH”**





A Soviet T-34 ablaze after being hit during the Battle of Kursk in the Soviet Union. July 1943.

HULTON/GETTY

## Effective against Soviet T-34s

★ **Hauptmann Markowsky, commander of III/Panzer-regiment 24, 24th Panzer Division, reported in November 1943:**

"My Abteilung consisted of two PzKpff IV-Schwadronen and two Sturmgeschütz-Schwadronen, each with 22 armoured vehicles... The mixture of Sturmgeschütz and PzKpff IV has proven itself to be

useful. The Sturmgeschütz are employed very much like Panzers often without any special protection against attack from close combat troops. This was okay because the local Russian infantry didn't attempt to attack in this way.

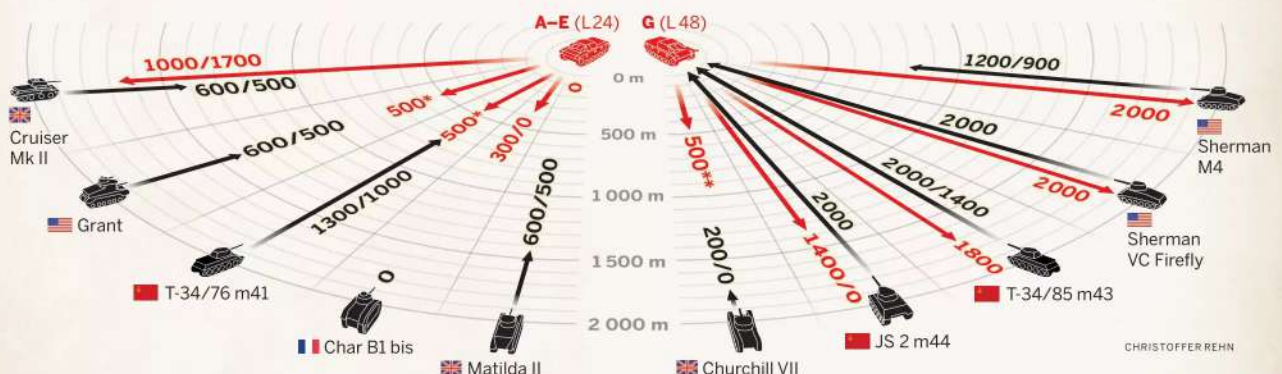
"The Abteilung now has nine days of heavy combat behind it. During this period it knocked out 184 enemy tanks,

87 anti-tank guns, and 26 artillery pieces with only four of our own lost.

"The enemy tanks were almost exclusively T-34 with a few heavy 15 cm assault guns. The superiority over the Russian tanks isn't due very much to the equipment as, primarily, to the training of the crews and the leadership within the Schwadronen."

## FACTS ★ StuG III v the Enemy – Armour Penetration

The chart shows approximate distances from which the StuG III and Allied tanks could operate against each other. The values are: First value = front impact to turret or superstructure. Other value = front hits to the chassis.



A battle could be decided at 2,000 metres but the shooting distance was usually shorter. The reason for this was that

terrain, weapon performance, visibility and access to the right ammunition set limits on the practical range.

\* Armour-piercing capped shells (Gr.38 Hl/A to C)  
\*\* High Explosive Anti-Tank rounds or armour-piercing charges (AP40 or A to C)



German troops on their way to Moscow. In the foreground is a StuG III version C or D. October 1941.



JULSTEIN/ALCOVERPRESS



## “ADOLF HITLER DEMANDED BETTER GUNS AND BETTER TANKS”

► The loader's main task was to reload the gun. Its ammunition consisted of explosive grenades, also armour-piercing ammunition in the form of armour-piercing shells (RSV) and HE rounds, as well as smoke shells. A total of 44 projectiles were on board – this increased to 54 in the last model (Ausf G).

The loader had no other options for observing than to stick his head up through his hatch in the roof. When the MG34 machine gun was added for defence against infantry attacks, it was his responsibility to man it. In May 1944, a *Nahverteidigungswaffe* – close-support weapon grenade launcher – was mounted in the hull roof. In addition, there were two pistols and hand grenades in the chassis.

The driver could observe straight ahead through a closable cupola with armoured glass or through a double periscope. He also had a view (later a gun opening) on the left but no equivalent view on the right. Getting in and out of the vehicle was normally done through the gunner's or commander's hatch and with a little effort, the driver could even squeeze out through the inspection hatch in the glacis plate just in front of his seat. The StuG was driven with steering levers and had a gearbox with six forward gears and one reverse. A Maybach V12 engine delivered 300 horsepower to the gearbox, giving a speed of about 40 km/h on the road and a range of about 160 kilometres.

In addition to driving the assault gun, it was the driver's responsibility to ensure that the StuG was in good mechanical order.

**FINNISH CORPORAL AND** gunner Eino Tolvanen revealed how it felt when the crew did not know or trust each other:

*“I sat in the gunner's place in the command vehicle (which temporarily served as fire support vehicle) with an unknown artillery ensign behind me (in the commander's space). We didn't know him, and he didn't know us. What would have happened if an*



A StuH 42 stands ready during the battle of Arnhem in September 1944. In the foreground is a British parachute.

*enemy T-34/85 had suddenly appeared in front of us? How would it have gone? In the commander's place was a novice who had climbed aboard an assault gun for the first time!”*

The introduction of Ausf B saw orders – with delivery from June 1940 – transferred to armoured-vehicle manufacturer Alkett, as Daimler-Benz concentrated on the production of tanks.

During the production of Ausf B, wider tracks were introduced for better weight distribution. With Ausf C the gunner received a new sight. The forward view port was eliminated, and a sight that combined options for both direct fire and indirect fire was introduced. Ausf D was the first version given extra strong armour plating. In Ausf E radio equipment was installed for use by platoons and company commanders. An MG 34 machine gun was added to the vehicle's apparatus – it was carried loose inside the carriage and operated by the loader when needed.

**IN SEPTEMBER 1941**, Wehrmacht high command (*Oberkommando der Wehrmacht*) informed the German Army command (*Oberkommando des Heeres*) that Adolf Hitler demanded better guns and better tanks based on early experience from the Russian campaign. During early exchanges, heavily ►

## Field-grey uniforms mixed with black

★ StuG belonged to the artillery. The uniforms were field-grey but the men were in the same section as the black armoured

troops. StuG crews that later joined the armoured divisions wore the same black uniforms as other armoured troops.



CHRISTOFFER REHN



# STUG III



The tank commander looks out through his periscope in an Ausf G. Next to him is the gunner.

Placing the target on the tip of the large triangle ensured its view wasn't obstructed.

The small triangles helped determine the target's distance and calculate the firing direction when moving.

This is what the gunner saw through the Sfl.ZF1 periscope (StuG III C-G) when giving direct fire. The sight could also be used for indirect fire.

► armed and well-armoured T-34 and the KV tanks made their mark.

By March 1942, development of Ausf F began. This was delivered with a longer 7.5-

cm StuK L/43 (L stands for the barrel length, measured in calibres), and from June an additional 30 mm additional armour was welded to the front. The last 31 F-model vehicles were also given a slightly longer gun, the L/48, which was introduced on the Ausf F/8. The new F/8 version was based on the latest Panzer III chassis. In December 1942, Ausf G arrived. In April 1943, *schürzen* – side plates – were introduced to increase protection in the weaker armoured sides. *Zimmerit* – anti-magnetic coating – was introduced in September, applied to the carriage as protection against magnetic mines. Production slowed after bombing raids on the factory in November 1943. A new type of moulded, rounded gun cupola was introduced towards the end of 1943, but production capacity was never high enough to fit this to all vehicles.

**EVENTUALLY, THE ADDITIONAL** plating was removed as the assault guns were delivered for final assembly with 80-mm plating in the front. In the

## “STUG III WAS WITHOUT A DOUBT THE GERMAN ARMY’S MOST SUCCESSFUL ASSAULT GUN”

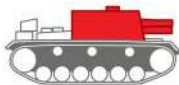
spring of 1944, a remotely controlled MG 34 was mounted on the roof, as well as a close-protection grenade launcher so that the loader could fire shells at close range. Some of the StuGs were also given an MG 34 parallel-connected to the main gun. The ammunition was increased from 44 to 54 grenades.

Each version was produced in small numbers until the Ausf G. It comprised around 84 percent of total production of StuG IIIs. There were several reasons: first, its long 7.5-cm StuK L/48 gun allowed the versatile weapon to support the infantry against various targets, including tanks. It was also true that German tank production only took off in summer 1943 – at the same time the StuG began to serve as a tank replacement within armoured platoons. Its lower price – just 80 percent of a similar tank – was also a key factor.

**STUG IIIS WERE** exported to several countries during the war. 59 Ausf G models were delivered to Finland in 1943 and 1944 while Romania, Bulgaria, Hungary, Italy and Spain also received deliveries. After the war, the guns were also used in Yugoslavia and Syria. The last operation using StuG III was possibly during the ‘Six-Day War’ in 1967.

StuG III was without a doubt the German army’s most successful assault gun – but then it had few competitors. With its various 7.5-cm guns and relatively strong front superstructure, it excelled at its main task – successfully supporting the infantry in battle. It served as ‘a port in a storm’ for the infantry.

The morale boost provided by a StuG unit’s mere presence cannot be overestimated. As the quality of enemy tanks improved, it became the job of StuG



Sturm-Inferieschütz 33B.

## Was fitted with howitzers and flamethrowers

★ Some StuGs were refitted and given different armaments: **Sturmhaubitze (StuH) 42.** 1211 StuG was fitted with a 10.5-cm howitzer, ‘bunker buster’. First fought in Nov 1942.

**StuG III (Fl), Flammpanzer.** In 1943, ten StuGs were fitted with a powerful flamethrower. **Sturm-Inferieschütz 33B.** In 1942–43, 24 remodelled StuGs each received 15-cm howitzers that could demolish

a building with a few hits. **StuG IV.** This model was built on the Panzer IV chassis, partly due to production problems following a bombing raid. A total of 1,143 were produced during 1943.





platoons to help the German infantry bridge the imbalance between forces as best as possible. It was especially effective as various anti-tank weapons, such as Panzerfaust, became common at the front.

But the fact remains – the StuG III was not a tank. Its gun could only be fired in the direction that the superstructure pointed, and in situations where the gun had to be fired to the side, the platoon's advance was hindered when the vehicle had to turn before it could fire. Things were different in a defensive situation. There were, however, problems in terrain where it was difficult to swing the entire gun.

Where StuG platoons were inserted, they tried to balance out the vehicle's lack of turrets by assigning them combat roles that could be performed without too much difficulty. For example, inserting StuGs into the first line of the attack was avoided but instead, the battle formations were grouped by depth. Another tactic was to split them up to support the army's tank divisions directly – a task for which the assault gun had been built.

In the final evaluation of what tanks and assault guns did on the battlefield, it's easy to see that the tanks took out significantly more enemy tanks. This probably explains why StuGs were given combat tasks to which they were better suited, which usually meant taking on targets considered vital for infantry and tank divisions looking to complete their missions.

The StuG III was certainly a successful weapon, as seen by the fact it was the German support vehicle with a gun barrel that was produced in the greatest numbers during the war. ✚

**Harald Sonesson** is a reserve officer with a background in tanks.



## Improved gun made StuG the tank destroyer

★ The gun in the first five StuG variants, Ausf A through E, was basically the same as the one in early Panzer IV tanks. The different types of ammunition that were available were: **armour-piercing shell** (K.Gr.rot.Pz), **High Explosive Anti-Tank round** (Gr 38 HL, directed explosive charge), **high explosive shells** (Spgr 34) and smoke grenades (Nbgr. Kw.K). The anti-tank and the armour-piercing shells were primarily intended for armoured targets.

**The armour-piercing shell's** penetration was directly linked to the kinetic energy released when it hit its target. This meant if the gun's firing speed was low, the strike capabilities were relatively poor – and less with distance.

**The high explosive shell's** penetration, on the other hand, was constant and not limited by distance since it occurred through direct explosive action. It still suffered from a low firing speed – around 400 m/s – which was particularly troublesome during combat with tanks. Since the projectile's trajectory was high, and the time from firing to reaching the target was



A StuG with a new gun on the Eastern Front in August 1943.

relatively long, securing a direct hit proved difficult. The high trajectory made it more difficult to correctly assess the distance than simply firing a weapon with a higher initial velocity. The path's long arc was primarily a problem when attacking moving targets.



RSV for the 7.5-cm StuK 37.

In practice, it proved a waste of time firing armour-piercing shells and high explosive shells at targets at distances of more than 800 metres.

With the introduction of the 7.5-cm L/43 and L/48 guns in 1942, the StuG was given the same powerful gun and armour-piercing capabilities as the Panzer IV. Its new gun allowed StuGs to take on high-spec enemy tanks.

In April 1943 *schürzen* – side plates – were introduced. They provided better protection against, among other things, Russian PVC rifles. Pictured is the StuG III Ausf G.







When the artillery failed to keep pace with Hitler's panzer divisions, it fell to the Luftwaffe to pave the way for them. Germany's infamous **dive bombers** played a crucial role in clearing the ground.

Text: RASMUS KJÆRBYE PETERSEN

# JU 87 STUKA FLYING ARTILLERY





Two Junkers Ju 87 Stukas sweep through the air. At the beginning of World War II, the dive bombers earned many victories on the battlefield.

52 PHOTO/IBL

**A**round 1930 the German *Reichswehr* – Realm Defence – started performing test flights with dive bombers at its secret base in Lipetsk in the Soviet Union. It used two-seater Junkers K 47 fighter planes that had been developed under the direction of – among others – Hermann Pohlmann in the late 1920s.

The army wanted to find out if dive bombing was a practical way to increase the precision of bomb attacks, or whether the unique demands placed on both aircraft and pilot were too severe. The experiments with the K 47 provided no definitive answers, but they were satisfactory enough to convince the *Reichswehr* to finance further tests with both this and other types of aircraft.

When the Nazis came to power in 1933, they immediately enacted measures to build a new air force under the command of veteran pilot and high-

ranking Nazi Hermann Göring. Göring brought in specialists, including staff officer Walther Wever and industrialist Erhard Milch. Wever and Milch began to develop specific military and industrial plans to facilitate the air force's reconstruction.

Over the long term, Wever equipped the future Luftwaffe with specialised bombers tailored to ►



### Stuka's steep dive

★ The attack, p101



### Under the magnifier

★ Great graphics, p102



### Jericho trumpet

★ Sirens, p103



## JU 87 STUKA

► either tactical or strategic missions. In the short term, it was necessary to quickly establish an air force that would serve as a deterrent to neighbours France and Poland who might be tempted to attack during Germany's military build-up. Milch also knew it would require years of industrial development before Germany could mass-produce large, multi-engine planes.

Dive bombers offered the perfect temporary fix for both Wever and Milch. These single-engine aircraft were relatively small and cheap to produce, and so wouldn't make excessive demands on German manufacturers. The plane's superior precision also made it better value for money – one could get the same results with fewer aircraft and bombs.

The plane's short range meant that it could only be used in tactical operations, but this wasn't considered a problem, because it was designed to be used as part of a defensive strategy – in other words, a dive bomber could be the answer to Germany's short-term aims, provided it worked as planned.

In September 1933, Junkers received an order to produce a dive bomber prototype based on its K 47 model. At the same time, the armed forces ordered a more conventional bomber from the rival manufacturer Heinkel.

## “IT WAS LOVE AT FIRST SIGHT WHEN HE SAW JUNKERS’ PLANNED DIVE BOMBER, THE JU 87”

### Strategic bombing

★ Attacks on the enemy's industry and population.

### Tactical bombing

★ Attacks on supply lines – roads, depots, etc – behind the front.

### Close air support

★ Attacks against enemy front lines.

Göring was aware he needed Wever's and Milch's expertise, but the fact also left him uneasy. He preferred to surround himself with staff that were personally loyal and never opposed him, which is why he began bringing old friends and colleagues into the Luftwaffe.

One of these was Ernst Udet. He was a veteran of Jagdgeschwader 1, the 'Red Baron' Manfred von Richthofen's famous fighter wing during World War I, which Göring had commanded in the last months of the war. Udet was almost entirely disinterested in politics and had become well-known throughout the interwar period as an international stunt pilot, barnstormer, and playboy.

During one of his trips to the US, Udet took in a show featuring the one-of-a-kind Curtiss 1A 'Gulphawk' plane. He was extremely impressed with its aerobatic abilities. US aircraft engineers and the military were among the most enthusiastic proponents of dive bombing, and adrenaline junkie Udet was quickly seduced by the Gulphawk's capabilities.

In 1933 Udet was called back to Germany by Göring. The Luftwaffe boss wanted him to become a member of the Nazi party and contribute to the German air force's reconstruction. Udet agreed, but only on the condition that Göring bought two Curtiss F11C Goshawks, the export model closest to the Gulphawk.

In May 1934, Udet invited Wever and several other officers to the artillery range at Jüterbog to demonstrate the Goshawk's capabilities as a dive bomber. He took his place in the pilot's seat, soared into the air and then performed a steep dive from one thousand metres altitude. He was determined to succeed with his first attempt, so waited until he was just one hundred metres from the ground before releasing his bomb. The bomb hit the target, but it was only with difficulty that Udet managed to pull up the Goshawk before it did the same.

Wever was not overly impressed. He already knew that dive bombing was a more precise form of bombing, while Udet's escapades merely confirmed his misgivings. He commented that they couldn't possibly expect the same nerveless and highly skilled



Reich Minister of Aviation Hermann Göring (left) in conversation with general and pilot Ernst Udet in 1938.





A Ju 87B plane takes shape in the Weser Flugzeugbau factory in Berlin-Tempelhof. In the foreground, Jumo 211D engines wait to be fitted to the rear of the fuselage. Picture from April 1940.

ULSTEIN/GETTY

performance from 'average pilots'. The Luftwaffe required aircraft that everyone could learn to fly.

This rejection, wrapped up in flattery, did not upset Udet. It was love at first sight when he saw Junkers' planned dive bomber, the Ju 87. From then, the WWI ace became its principal supporter until his death.

Hitler hadn't officially rejected the Treaty of Versailles at this time, so the Ju 87 couldn't be constructed in Germany. The first prototype, like its predecessor, the K 47, was built in Sweden, specifically in Malmö by a subsidiary of Junkers, AB Flygindustri.

**H**ermann Pohlmann came up with the plane's design and, unsurprisingly, he was influenced by his experiences of designing and building the K 47. The brief demanded that the Ju 87 be simple to build, yet robust – examples of this included the fixed undercarriage to avoid potential issues with retractable landing gear.

A fixed undercarriage brought other problems, however, including increased air resistance.



**Junkers K 47.**



**Curtiss F11C Goshawk.**

**The Ju 87's predecessors: K 47 and Goshawk.**

Pohlmann solved this in two ways. First, the undercarriage and wheels were fitted with aerodynamic 'spats', and second, the undercarriage's height was made as short as possible by 'folding down' the wings over the wheels. This 'inverted gull wing' design, helped improve the pilot's view and became one of the Ju 87's most striking features.

Another detail that Pohlmann took from the K 47 was Junkers' distinctive *doppel Flügel* (double-wing) construction. These used full-span ailerons hinged just below the trailing edge of the wing. They were supported by flaps divided into three sections to increase the plane's lifting power at low speed. There were also dive brakes fitted under each wing, to help maintain a constant speed during the plane's dive.

Pohlmann's original Ju 87 design also had a double vertical stabiliser – again, like the K 47 – to give the rear gunner a better field of fire.

**T**here was one area where Pohlmann ignored the brief to simplify everything as much as possible. The same doubts that Wever had expressed in Jüterbog led him to introduce an ▶





ULLSTEIN/IBL  
Two Ju 87Bs attack a target in France with 250-kg and 50-kg bombs. June 1940.

- ▶ automated system to take control of the plane's dive, pulling it up automatically when it dropped below a certain height. It meant this previously dangerous manoeuvre was no longer the pilot's concern. Instead, he could focus entirely on his target.

**T**he first Ju 87 prototype had already been transported secretly to Germany before the end of 1934. There were doubts about the fuselage's durability, though – it had to be capable of coping with a 90-degree dive, so the following year was spent reinforcing the plane. It wasn't until September 1935 that the first test flight was carried out with WWI ace and test pilot 'Willy' Neuenhofen at the controls.

The only problem Neuenhofen reported was that the engine, a Rolls-Royce Kestrel, had overheated because the radiator was too small. It was a worry, though – this was only the first test flight, and the plane hadn't yet been pushed that hard.

On 24th January, 1936, Neuenhofen deliberately forced his Ju 87 into a spin to expose the aircraft to harsh aerodynamic stresses. Concerns over the aircraft's structural strength were tragically vindicated. The double vertical stabiliser collapsed, the prototype became impossible to control and crashed, killing both Neuenhofen and his mechanic.

**T**he accident did not help the plane's questionable reputation with the Luftwaffe. It strengthened the scepticism of staff officers towards the whole dive-bombing concept. Its fiercest critic was Wolfram von Richthofen (cousin of the Red Baron), who was responsible for the Luftwaffe's development and purchase of aircraft. Richthofen's prime concern, however, proved not to be the plane's structural integrity, which was solved by Pohlmann switching to a single vertical stabiliser tail for his next prototype, but rather its engine.

The objection was political and stemmed from the fact that the engine was foreign. Junkers resolved this in March 1936 when it installed one of its own 700-horsepower Jumo 210 engines in the next prototype.

Richthofen believed this – like its predecessor – was too weak, however. A dive bomber lost a lot of speed after levelling up from its dive and was now close to the ground. If it didn't have enough engine power to rise again quickly, it would be extremely vulnerable to flak from anti-aircraft fire. Its low speed also made the plane an easy target for enemy fighters.

The problem was that, despite the aviation industry's rapid development under Milch's harsh leadership, there were not yet enough powerful engines, which was one of the reasons why Junkers had initially used a British model. One of the few potentially suitable engines, the 1,000-hp Daimler-Benz DB 600, was earmarked for other projects, including the Ju 87's competitor from Heinkel, the He 118. On 9th June, the Luftwaffe – following Richthofen's instructions – ordered that all work on the Ju 87 cease.

The dive bomber's death sentence proved short-lived. The same day it was issued, Udet took over as head of the Reich Air Ministry's development wing. The following day, the order to halt development on the Ju 87 was rescinded.

Udet's new position was the first step in a wide-ranging overhaul of the Luftwaffe, which had begun after Wever died in a plane crash on 6th June. Göring made sure to move his favourites higher up the command chain, which marginalised

**“ITS LOW SPEED MADE THE PLANE AN EASY TARGET FOR ENEMY FIGHTERS.”**

Article continues on page 104 ▶



# Poor accuracy inspired dive bombers

★ During World War I, aircraft pioneers quickly realised that horizontal bombing from high altitude offered no precision. The bomb's drop was determined by both gravity and the plane's speed, which resulted in a parabolic path. There was also the question of air resistance, which was influenced by both the bomb shape as well as the wind speed.

**ONE SOLUTION** was to develop a better bombsight – basically an analogue computer that took all these factors into account, but this would require both time

and money. Another much easier solution was to drop the bomb while the plane was in a nose dive. The steeper the dive, the straighter the bomb's path.

**THIS APPROACH** required no advanced instruments. During a 90-degree dive, the pilot could aim the bomb using the entire plane, the same technique adopted by fighter pilots with their machine guns. This did, however, subject the wings to enormous stresses, both during the dive itself and – primarily – when the pilot pulled the plane out of the dive. This

excluded multi-engine planes, at least for the most extreme dives, due to the extra weight of their engines on the wings. In the 1920s and 1930s, however, dive bombing was widely viewed as an attractive alternative to horizontal bombing until improved bombsights were developed.

**A Stuka pilot from the Condor Legion plunges almost vertically towards a city during the Spanish Civil War in 1938.**



## How Stukas attack

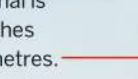


**1** From an altitude of around 4,600 metres, the pilot knows he is above his target when he sees it through a small window in the plane's floor. He sets his instruments, after which the automatic control system takes over.



**2** After the coolant flaps are closed, the plane rolls over on to its back before straightening with its nose pointing to the ground at a 60- to 90-degree angle (based on how the instruments were set).

**3** The pilot keeps the target in his sights. When he's in range, he presses the trigger to release the bombs.



**6** The plane has lost much of its speed and becomes an easy target, particularly as the system always followed the same flight path (many experienced pilots disconnected the automatic system for this reason and carried out the attack manually).

**4** At the same time, a signal is sent to the control system to stop the dive. This also happens automatically if no trigger signal is received and the aircraft reaches the minimum height of 450 metres.

**5** The pilot and rear gunner can experience forces of over 5g when the Stuka levels out. It's not uncommon for them to temporarily suffer vision impairment or black out.





# STUKA

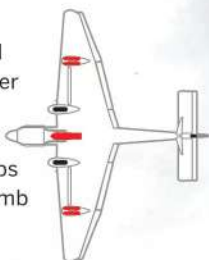
The Junkers Ju 87 received its baptism of fire during the Spanish Civil War in 1937 and remained part of the Luftwaffe until WWII ended. About 6,500 aircraft were produced.



**Sight** The pilot could see the target through a window in the floor. The attack started when the target was within the sight.



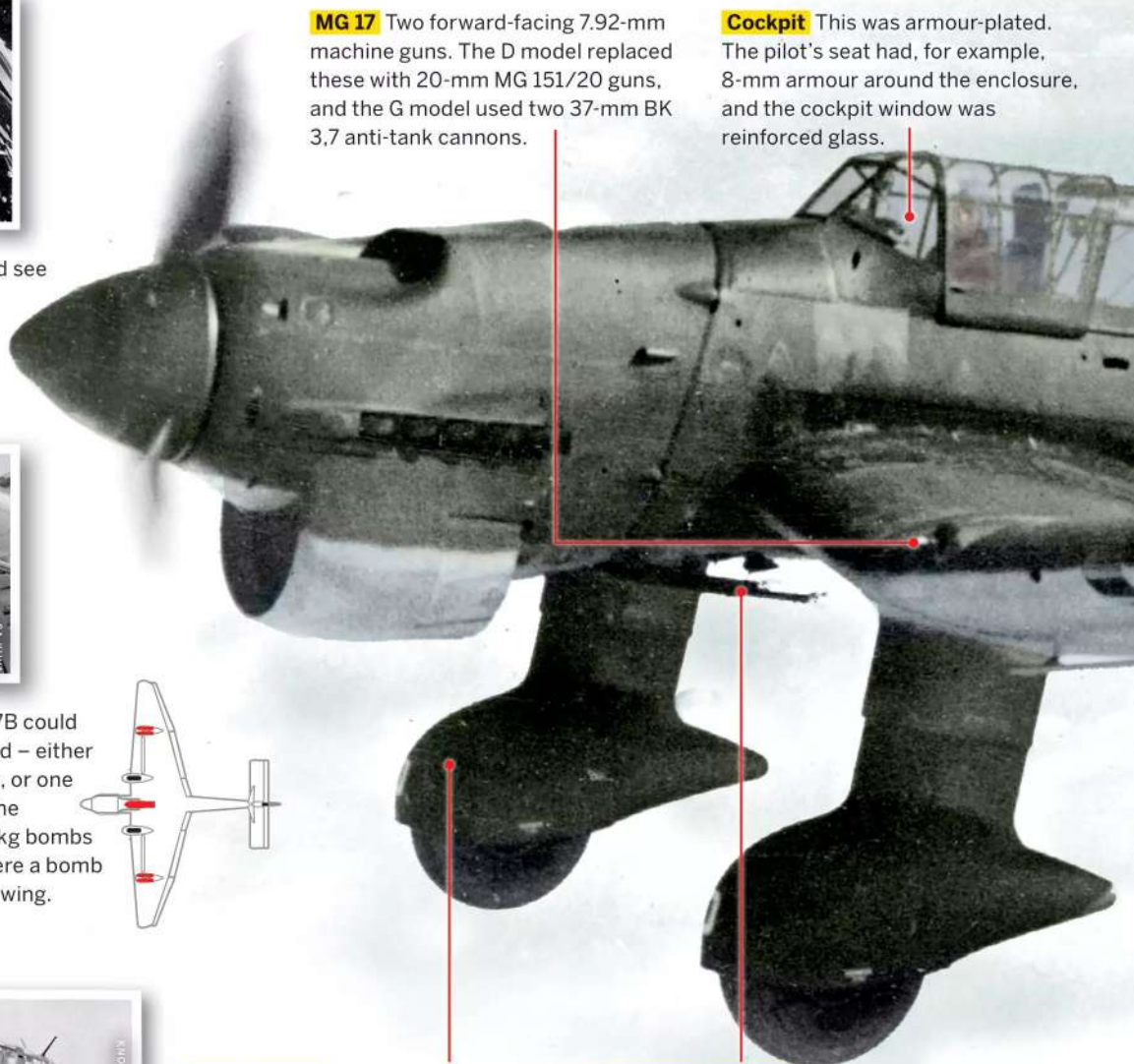
**Bomb load** The Ju 87B could carry a 500 kg payload – either a single 500-kg bomb, or one 250-kg bomb under the fuselage and four 50-kg bombs beneath the wings. Here a bomb is attached under the wing.



Ju 87A with its large spats.

**Landing gear** To reduce the risk of mechanical complications, the gear was fixed. It had streamlined 'spats' to reduce air resistance. These were reduced in size from the Ju 87B model on.

**Release mechanism** The main bomb was attached to a release mechanism that swung out so the bomb didn't hit the propellers when it was released.



**MG 17** Two forward-facing 7.92-mm machine guns. The D model replaced these with 20-mm MG 151/20 guns, and the G model used two 37-mm BK 3.7 anti-tank cannons.

**Cockpit** This was armour-plated. The pilot's seat had, for example, 8-mm armour around the enclosure, and the cockpit window was reinforced glass.



# Sirens were a psychological weapon

★ It may have been Ernst Udet – or possibly Hitler himself – who suggested the Ju 87 be equipped with a siren for psychological warfare. During the nose dive, the siren's propellers were driven by the wind, giving rise to a terrifying

sound. The Germans dubbed it the Jericho Trumpet, after the biblical trumpets that caused Jericho's walls to collapse. At the start of the war, the sirens scared people witless, but eventually the enemy grew accustomed to

the sound. The sirens were then removed because they increased air resistance.

Today, many associate the Jericho Trumpet's wail with diving planes, even though they don't know where the sound originates.



**The sirens were mounted on the landing wheels.**

**MG 15** The rear gunner had a 7.92-mm MG 15 machine gun to defend the plane. On the Ju 87D, the weapon was upgraded with a MG 81Z, which had a higher rate of fire.



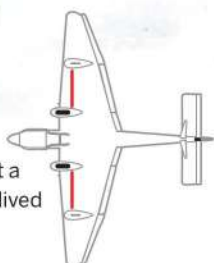
**MG 15.**

**The Ju 87B was put into production in 1937. Undated picture.**

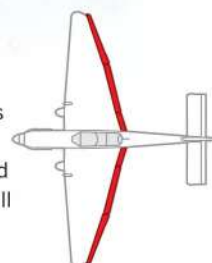


**Gull wings** The wings had a characteristic inverted shape. This meant that the undercarriage could be made shorter, which reduced air resistance and improved the pilot's view.

**Spoiler** Air brakes under the wings kept the Stuka's speed at a constant 500-600 km/h as it dived towards its target.



**Large rudder** The aileron and flaps were exceptionally large and went along the entire wing. The increased lifting force allowed the Stuka to pull out of its dive quicker.



Version	Ju 87A	Ju 87B	Ju 87R	Ju 87C	Ju 87D	Ju 87G
Length	10.8 m	11 m	11.1 m	11 m	11.5 m	11.1 m
Height	3.9 m	3.9 m	4.01 m	3.9 m	3.9 m	3.9 m
Wingspan	13.8 m	13.8 m	13.6 m	13.8 m	15 m	15 m
Wing area	31.9 m <sup>2</sup>	31.9 m <sup>2</sup>	31.9 m <sup>2</sup>	31.9 m <sup>2</sup>	33.6 m <sup>2</sup>	33.6 m <sup>2</sup>
Weight (empty)	2,300 kg	2,750 kg	2,750 kg	2,760 kg	3,940 kg	4,400 kg
Weight (full)	3,400 kg	4,250 kg	4,350 kg	5,840 kg	6,600 kg	6,600 kg
Engine	Jumo 210, 12 cylinders	Jumo 211, 12 cylinders	Jumo 211, 12 cylinders	Jumo 211, 12 cylinders	Jumo 211, 12 cylinders	Jumo 211, 12 cylinders
Max speed	320 km/h	380 km/h	340 km/h	332 km/h	400 km/h	344 km/h
Range	1000 km	500–600 km	1,800 km	580 km	1,000 km	1,000 km



**Ju 87G Kanonenvogel with its two 37-mm anti-tank cannons.**

BUDESMATERIALIEN  
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## JU 87 STUKA



► more independent officers like Richthofen. Udet's favourite project, the Ju 87, benefited from this development. On 27th July, Udet test flew the He 118, which was a fighter-bomber rather than a dive bomber. It wasn't as robust as the Junkers plane, and Ernst Heinkel warned Udet by phone that the propeller was not designed for the speeds attained during steep dives of more than 50 degrees. But on the day of the test, Heinkel was visited by renowned US pilot Charles Lindbergh and was not on-site to reiterate his warning to Udet.

The former stunt pilot appeared to forget Heinkel's advice and put the He 118 into a dive so steep that the prototype virtually disintegrated. Udet was able to bail out by parachute but was so upset that there and then he declared the Ju 87 the winner of the competition. After the war, Heinkel claimed that Udet had deliberately exceeded the aircraft's limitations.

Udet's decision didn't end the criticism from Richthofen and his colleagues. Regular test flights, partly using prototypes and partly with the first pre-production model (the Ju 87A-0) at the start of 1937 confirmed many of the faults they'd predicted. Disgruntled by the new direction the Luftwaffe had taken – and after months of fruitless discussions with Udet – Richthofen agreed in November 1936 to lead the Condor Legion in

**One of the four Ju 87 as deployed with the Condor Legion. Note the emblem and the characteristic spats on the landing wheels.**

Spain. These changes coincided with an evolving view of the Ju 87's role. The aircraft could now serve as an instrument in Hitler's increasingly aggressive foreign policy. It was also at this time that the term *Sturzkampfflugzeug* – dive bomber – started to appear. The term should have included all types of dive bombers, but the abbreviation – 'Stuka' – became inextricably linked to the Ju 87.

In June 1937, a single Ju 87A-0 went to Spain disguised as freight. The plane could now be tested in the realistic setting of the country's civil war. The aircraft was sent back after just over a year and was replaced in January 1938 by three Ju 87A-1s. The feedback from Spain was mostly positive, but the plane did reveal further teething problems. For example, the aerodynamic spats were too long.

They often dug into the ground when the plane landed on an uneven airfield.

A lack of engine power remained the Ju 87's biggest problem, however. It could not cope with its planned 500-kg bomb load. Instead of settling for 250 kg, the Condor Legion chose to leave the rear gunner on the ground. This wasn't a major issue at the time, as the Republicans' air forces were few in

number and badly organised. There were also no air defences to speak of and Republicans failed to shoot down any of the four A models deployed to Spain. This apparent success perhaps helped lull the





Luftwaffe into a false sense of security regarding the Stuka's vulnerability.

The Ju 87B solved many of the early problems, including the addition of a more powerful engine in the form of the 1,200-hp Jumo 211. This meant that the aircraft could carry a full bomb load without jettisoning the rear gunner. The spats were also smaller, which facilitated the Jericho trumpets (see page 35) and ensured their characteristic howl would be heard across Europe's battlefields.

**M**eanwhile the army honed its *blitzkrieg* plans. Horse-drawn artillery wouldn't be able to keep up with its rapid pace, and would therefore be replaced by Stukas. The Germans developed three types of missions for them to fly:

- Prior to an offensive, all available aircraft would be deployed against specific targets to soften the front and prevent the enemy from assisting its troops there with aircraft, supplies and reinforcements – much like during an initial artillery barrage.
- When the offensive started, *Staffel* units (12-16 planes) would fly as an advance party tasked to react swiftly if the enemy attempted to build new defensive positions or launch a counteroffensive.
- *Kette* units (three planes) would operate independently across the battlefield to attack targets or provide close support to ground forces.

Advanced war preparations introduced a new philosophy to the Luftwaffe's leadership. It demanded that as many aircraft as possible be inserted into the various theatres of war. Stukas, therefore, took on roles the plane hadn't really been designed for, such as attacking ships. For this purpose, the Ju 87R (where R stood for *Reichweite* – operational range) was developed. Its extra fuel tanks – both internal and external – were 'drop tanks', designed to be released when empty. They allowed the plane to operate over large distances at sea or be set against strategic targets on the ground. In order to accommodate the extra fuel tanks Ju 87Rs had to settle for a 250-kg bomb load.

The Luftwaffe also started development on the C model, to be deployed on the aircraft carrier *Graf Zeppelin*, which was under construction. This model was fitted with a tailhook for slowing down using arresting wires as well as foldable wings. The plane could carry a bomb or a torpedo, but was discontinued as *Graf Zeppelin* was never completed.

Another aspect of Luftwaffe's new emphasis on versatility was Udet's demand that other aircraft models also be able to perform dive-bombing attacks. This even applied to the planned four-engine He 177, which put an end to that project (it eventually saw the light of day as a two-engine

## "STUKAS WERE THEREFORE REQUIRED TO TAKE ON ROLES THE PLANE HADN'T REALLY BEEN DESIGNED FOR"

bomber). Many other Luftwaffe bombers were forced to fly with spoilers they rarely used.

In early 1939, the B model was approved in Spain (although two of five aircraft there were shot down). It went into mass-production, which meant 60 aircraft were produced a month in Germany. As a result, more than 300 planes had been completed by the outbreak of World War II. When combined with the A model, the Luftwaffe had 360 Ju 87s available. This 'handful' of planes would become legendary.

Although relatively few in number, they achieved results far beyond expectations. This was partly due to their excellent precision as well as the psychological effect they had on soldiers and civilians alike, which was reinforced by the Jericho trumpets. Their howling was enough to trigger panic in both Poland and across Western Europe. The name Stuka became synonymous with the *blitzkrieg* in Europe's collective consciousness.

**G**erman soldiers and civilians alike swallowed the myth of the Stuka's invincibility, too. The Luftwaffe staff however could see how the statistics painted a different picture. Yes, the Ju 87 played its role to perfection when it operated under a protective umbrella of fighter aircraft. But its loss figures rose considerably at the slightest resistance or when faced by powerful anti-aircraft defences.

In Poland, Norway and France, the Stuka's vulnerability was partly obscured by the fact that the Germans quickly attained supremacy in the air, which saw the planes often deployed against targets with little or no air defences. This wasn't the case when the Luftwaffe attempted to break the RAF on its own during the Battle of Britain in 1940, a strategic task to which most German aircraft were poorly suited. Britain's radar network meant its fighter aircraft were rarely avoided, and most targets had anti-aircraft guns.

Its few victories on the ground failed to justify the high loss figures. Perhaps worst of all, the Stuka quickly lost its ability to intimidate. Instead, ▶

Ground support carries a 50-kg bomb to a Ju 87 at Immola airport in Finland in June 1944.



SAKUMA



## JU 87 STUKA

► the plane became almost ridiculous in the eyes of the enemy, as seen by the nicknames it was given: the Spanish called it *Stupido* (stupid), the Russians *Lopata* (shovel) and the British Sitting Duck or Nazi Hoax. Even the Italians were slightly dismissive, dubbing their own Ju 87 planes *Picchiatello* (slightly crazy or crackpot).

It's often said the plane was a failure during the Battle of Britain, but over six weeks the Germans lost 59 planes, versus 31 aircraft lost during the invasion of Poland. Under the circumstances, this wasn't a major increase. German industry, however, failed to produce new aircraft fast enough to replace the losses, and so the air offensive had to be interrupted.

The Ju 87 continued to fly targeted missions across England until September, when Hitler cancelled plans for invading Britain. Large forces were transferred to Poland in advance of the planned invasion of the Soviet Union, but Stukas continued to make smaller, but strategically valuable, attacks on British naval traffic.

**T**he Ju 87 was not seen as a failure inside the Luftwaffe, despite the setbacks over Britain.

The Germans simply accepted that there were missions for which the plane wasn't suitable, but the coming war with the Soviets wouldn't be one of them. As a result, Stuka production increased.

Why didn't the Germans attempt to develop a better dive bomber? One key reason was Göring's and Udet's obsessive desire to make all aircraft as versatile as possible. The Stuka's intended successor was the Me 210, which without modification could function in a variety of roles: diver bomber, heavy fighter (*Zerstörer*) and fighter-bomber. Although its design had no serious flaws, the demands placed on it probably limited the plane's overall suitability.

In 1941, the Ju 87D arrived – its standard model now housed extra fuel tanks in line with the R

## “ITS FEW VICTORIES ON THE GROUND FAILED TO JUSTIFY THE HIGH LOSS FIGURES”

model and a 1,420-hp Jumo 211 engine allowed its bomb load to almost quadruple to 1,800 kg.

Operations in the Balkans, North Africa and the Soviet Union confirmed previous experiences. When the Ju 87's back was covered, the plane guaranteed progress on the ground by clearing the way for armoured forces and by preventing the enemy from launching reprisals.

Not even the harsh Russian winter hindered the Stuka to any great extent. It played a decisive role during the Soviet counterattacks outside Moscow. In the wake of Operation Barbarossa, dive-bomber wing Stukageschwader (SG) 77 had destroyed 2,401 enemy vehicles (including aircraft on the ground), 234 tanks, 92 artillery batteries and 21 trains for the loss of just 25 aircraft. It was the best result achieved by any comparably sized German unit.

The Stuka became easy prey again, however, as 1941 ended, as the enemy received increasing numbers of superior fighters in North Africa and

during the Battle of Stalingrad on the Eastern Front. The Ju 87, which from its very beginnings had a somewhat old-fashioned design, was

now considered obsolete. During 1943, an increasing

number of units switched their Ju 87s for the fighter aircraft version of the Focke-Wulf Fw 190 (thus losing the right to call themselves Stuka). The dive bomber's day had passed.

Nonetheless, the Ju 87 would have a last chance to leave its mark on the war as the Soviets deployed



**A Ju 87 bombs British positions at Tobruk during the battle in June 1942. The Allies eventually received better fighters and the Stukas became easy prey.**

ULLSTEIN/GETTY





**A 37-mm anti-tank cannon mounted on a Ju 87G. Stuka pilot Hans-Ulrich Rudel (right) scored several victories with this version.**



more tanks against the hard-pressed German army, the need for flying 'tanks' became acute. The Luftwaffe had already developed the Hs 129 for this purpose, but its capacity was less than the Stuka's. There were fewer planes too, while the production of the Ju 87D had increased to 150 planes per month.

**T**he Ju 87D-3 and D-5 models had already been developed as ground-attack aircraft that could also be launched against tanks. But, acting on Stuka pilot Hans-Ulrich Rudel's proposal, the Luftwaffe decided to equip the Stuka with two powerful 37-mm anti-tank cannons in self-contained gun pods under its wings.

This became the Ju 87G (models E and F were abandoned before entering production). It was also

known variously as *Stuka mit dem langen Stangen* – Stuka with the long rods, *Kanonenvogel* – cannon bird or *Panzerknacker* – tank buster.

This plane operated at a low altitude and could therefore often stay away from enemy fighters. Its improved armour also made anti-aircraft defences less of a problem. When flown by a skilled pilot like Rudel, the plane was able to continue operating in daylight, but most Ju 87s operated at night.

Although the Ju 87 was supposed to be one of Luftwaffe's most specialised planes, it ended the war tackling many different roles. This wasn't so much a victory for Udet's wish for versatility, but rather confirmation that only the Ju 87 existed in sufficient numbers to fill a desperate need.

That said, the fact that so many Stukas were built with the ability to be adapted for new roles was almost exclusively down to Udet. Without his obsession, the Luftwaffe would have abandoned the Ju 87 at the prototype stage and concluded that the dive bomber wasn't suitable for warfare on land.

**T**here's no doubt the Stuka's shock effect contributed significantly to many victories in 1939-40 – and the plane continued to be an effective weapon whenever it was unmolested in the air.

But in the war's final phase, the Luftwaffe would probably have fared better with a larger number of fighter-bombers, which were more likely to survive in airspace increasingly dominated by the enemy.

Udet never got to see the Ju 87's continuing development. He took his own life in November 1941, apparently overwhelmed by the administrative responsibilities placed on him along with his conviction that the war against the Soviet Union would be a disaster. 🇪🇺

**Rasmus Kjaerbye Petersen** is a noted writer of military history.

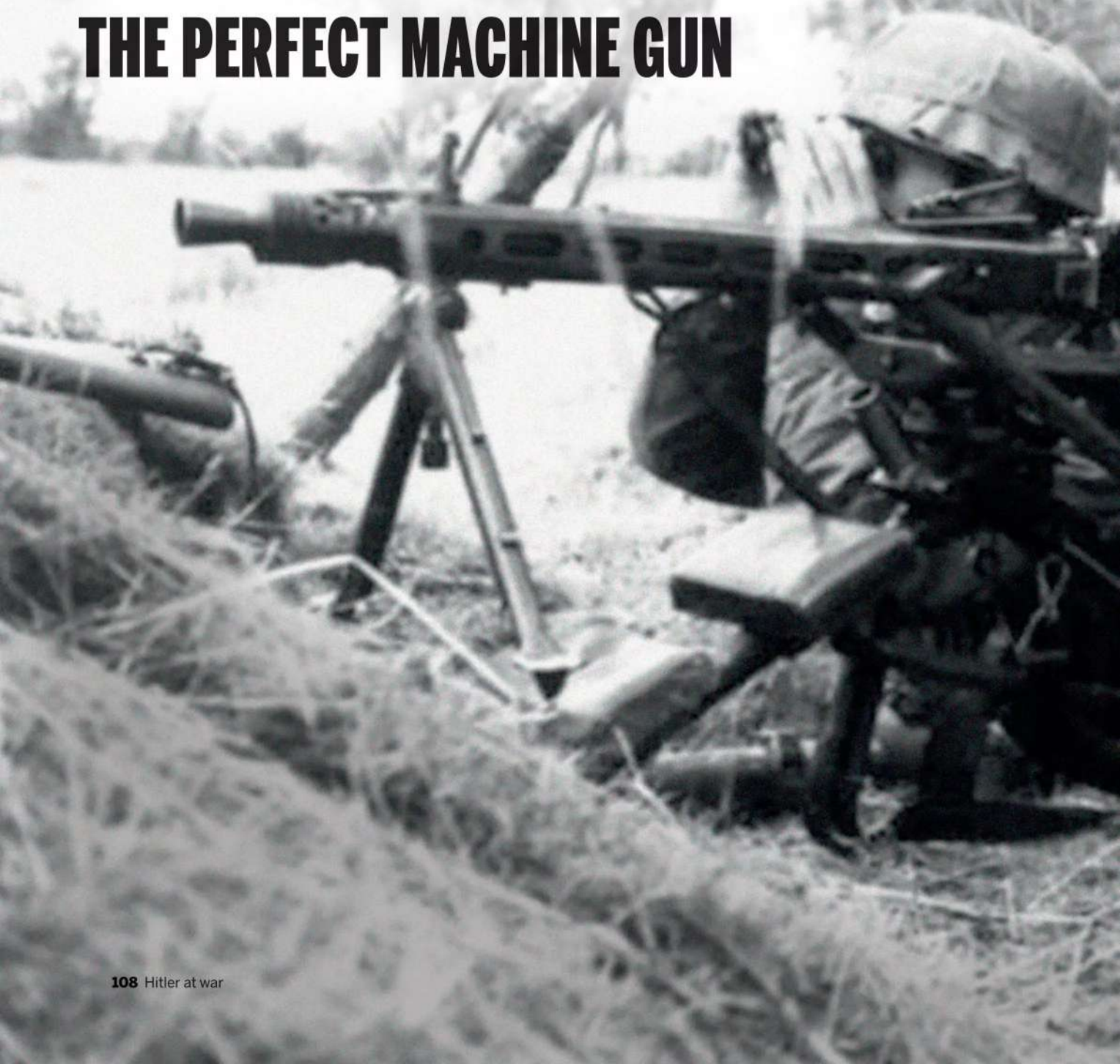
**Further reading :**  
**Junkers Ju 87 Stuka** (2014) by Mike Guardia  
**★ Junkers Ju 87: From Dive Bomber to Tank Buster 1935-45** (2012) by Eddie Creek.





# MG 42


**THE PERFECT MACHINE GUN**





Between the two world wars, the Germans developed a new tactical doctrine in which the machine gun played a key role for the infantry. During World War II, they also brought out the perfect weapon for this role: the **MG 42**. It strengthened the German infantry both offensively and defensively.

Text: RASMUS KJÆRBYE PETERSEN



German paratroopers  
with an MG 42  
machine gun  
during the fighting in  
Normandy in  
June 1944.



**D**uring World War I the machine gun was the most important infantry weapon. At the beginning, heavy machine guns were used for defence and were often placed in positions in front of the trenches. As the name suggests, they weighed a lot, both because they were solidly built and because there was a cooling jacket around the barrel to prevent overheating. They were therefore almost always placed on a short bipod and were difficult to move. In return, however, they delivered an almost constant stream of bullets without overheating and were also reasonably accurate, since the tendency for automatic fire to go off target was offset by the steady mount.

**DURING THE COURSE** of the war, it became obvious that the heavy machine gun gave the defender a huge advantage. An attacking infantry company armed with guns had significantly less firepower than a defending infantry company with just a few machine guns. Consequently, there had to be more attackers and they had to be prepared for heavy losses.

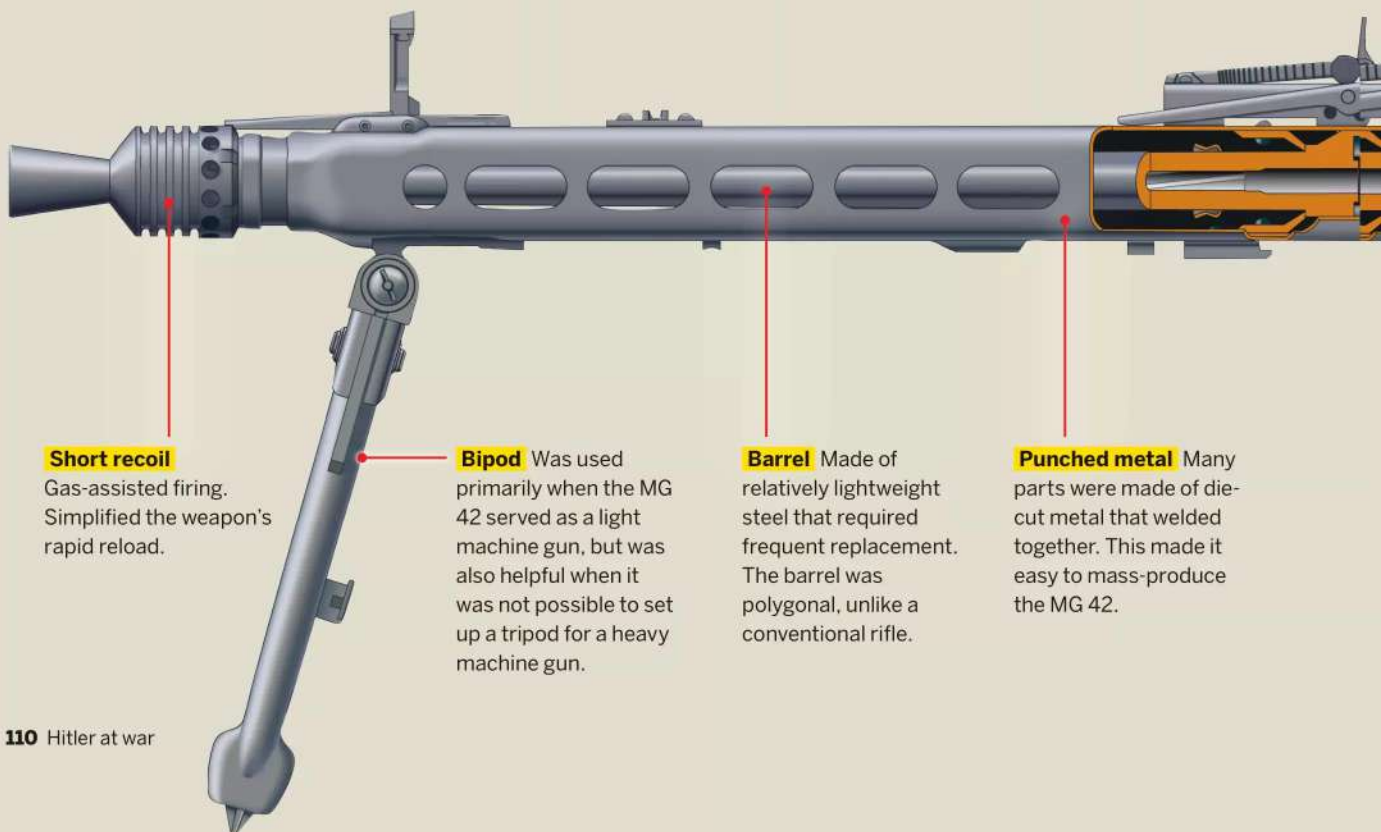
To tackle this problem, a light machine gun was developed. It should weigh no more than a

**“IN THIS WAY, A NEW MACHINE GUN COULD BE DEVELOPED OUTSIDE GERMANY’S BORDERS”**

soldier could carry through no man’s land during an advance and then even out the odds when he reached enemy lines. Obviously, the requirements for a light weapon meant certain restrictions. As a rule, soldiers had to make do without water cooling, so would have to make do with a less efficient air cooling system. In order that the gun didn’t overheat, it wouldn’t be able to provide the same continual flow of bullets as a heavy machine gun. But since a light machine gun did not have a mount to keep it stable and the magazines were also relatively small, light machine guns were limited to short bursts anyway.

The 1919 Treaty of Versailles limited the size of the German Army to 100,000 men or ten divisions

## Easy to manufacture and reliable



### Short recoil

Gas-assisted firing. Simplified the weapon’s rapid reload.

### Bipod

Was used primarily when the MG 42 served as a light machine gun, but was also helpful when it was not possible to set up a tripod for a heavy machine gun.

### Barrel

Made of relatively lightweight steel that required frequent replacement. The barrel was polygonal, unlike a conventional rifle.

### Punched metal

Many parts were made of die-cut metal that welded together. This made it easy to mass-produce the MG 42.



(of which seven were infantry). The number of light and heavy machine guns allowed in each division was also specified in the treaty. However, General Hans von Seeckt, who took over command of the Wehrmacht in 1920, refused to be held back by these restrictions. He believed a new war was inevitable, so began planning for future rearmament and an expansion of the army. An important component of this plan was that each machine gun unit (a unit of 12 men, later between six and ten men) should have their own machine gun. It meant that the group had about the same, or perhaps even greater, firepower as a traditional infantry company consisting of around 120 soldiers armed with rifles.

**THUS, HANS VON** Seeckt's vision, realised by the Wehrmacht after 1935, differed significantly from the practice that had prevailed during World War I, when each battalion had comprised several infantry companies and a separate machine gun company. Machine gun companies had more or less been permanently attached to infantry companies (often two to each), but they only acted as a support weapon. Under attack, the machine gun units still had to use rifles to defend themselves, and the



The MG 34, predecessor to the MG 42, is considered to be the first universal machine gun. It was designed to cover every role on the battlefield, from light machine gun support to vehicle-mounted gun on tanks and submarines.

Soviet Union and the Allies continued to follow the same principle during World War II.

A typical German infantry company during World War II (at least on paper) held over 15 machine guns, the company's primary weapon for both defence and attack. But it was awkward using both light and heavy machine guns. The company's flexibility would increase significantly if the same weapon could be used in both roles. This was no new idea. Both sides had already toyed with the concept during the World War I. The Germans had developed an *Einheitsmaschinengewehr* – Universal ►





Each ammunition belt had 50 cartridges, but often the loader grouped five lots together so he'd know when the barrel needed replacing (after around 250 shots).



HAS/BUNDESARCHIV, BILD 101/559-1076-29 (CC-BY-SA)

- machine gun – in the form of the water-cooled (but fairly portable) machine gun MG 16, which, however, had not gone beyond the prototype stage before the war ended.

Truppenamt – the cover organisation for the German General Staff (which was officially disbanded by the Treaty of Versailles) – continued Hans von Seeckt's work after his retirement in 1926. While the treaty formally remained in effect, however, no official orders could be issued regarding the production of a new machine gun. It was therefore up to private industry to develop – on its own initiative – a weapon that was suitable for the type of warfare planned by Truppenamt.

One company that took up the opportunity was Rheinmetall-Borsig. To bypass the Versailles peace agreement, the company purchased the Solothurn weapons factory in Switzerland. In this way, a new machine gun could be developed outside Germany's borders. In 1929, Solothurn launched the MG 29, which featured many of the features that would characterise German machine guns during World War II. It was admittedly air-cooled, but could still deliver a constant stream of fire, and the barrel could be replaced quickly when it became too hot.

**IN 1935, HITLER** announced that Germany no longer recognised the terms of the Versailles treaty. The Wehrmacht had ignored the peace agreement's restrictions for a long time and it was obvious it

had already set out the requirements for a new machine gun. It would not only function as both light and heavy machine gun, but could also be used as an anti-aircraft gun and as a self-defence weapon on a wide range of transport including aircraft, submarines and tanks. It would involve standardisation and rationalisation on a scale rarely seen in Nazi Germany.

Neither the MG 29 nor its production model MG 30 lived up to expectations and the weapon was scrapped by the army, but received the green light for export. However, both MG 29 and MG 30 were starting points for Rheinmetall's next model, a machine gun with the designation MG 34, developed in collaboration with Mauser-Werke. This weapon is considered the first "universal machine gun" to be used widely worldwide.

354,000 units of the MG 34, which met all the requirements set by the Wehrmacht, were produced between the period 1936–45. But even though the machine gun became the army's new standard weapon, it had some problems. To meet its numerous demands Rheinmetall had overthought the MG 34's design. Its many complex components required assembly by specially trained workers, which in turn made the gun extremely sensitive to dust, and it could easily jam when used in the field. The weapon was not really suitable for mass production, which was a major problem for an army that was in the middle of a massive expansion, soon to fight in a new world war.

**THE SEARCH FOR** the MG 34's replacement began before the outbreak of war. Many companies submitted tenders for the contract, including Metall & Lackierwarenfabrik Johannes Großfuß AG, who had no previous experience with weapons production. In return, Großfuß had an engineer named Werner Gruner (mistakenly called Grunow in several instances), who was an expert in metal punching and mass production. He could approach the task by thinking outside of the traditional scope of a gunsmith.

Gruner participated in a six-week-long machine-gun training run by the army where he learned to handle a machine gun, what was expected of the weapon and what the ordinary soldier thought was important. In light of his newly acquired knowledge, he began developing a weapon in which the number of complex parts was greatly reduced and the rest of the weapon was made from components that could be easily punched out and welded together by workers without much experience.

The result of this work was the prototype MG 39. The army showed great interest in the weapon, but Großfuß did not have the capacity needed to further develop the machine gun. Instead, the work was ►

**“ALLIED SOLDIERS SOON  
LEARNED TO RECOGNISE,  
AND FEAR, THE  
CHARACTERISTIC SOUND”**





German soldiers with an MG 42 take up a covered position in one of Stalingrad's factory buildings.

## Six men fired heavy MG 42

★ When an MG 42 was used as a heavy machine gun, it took a group of six men to man it:

1. A group leader (NCO) who was the primary machine gunner. He was also armed with a MP 40 submachine gun.
2. A loader helped with ammunition and changed the barrels. He was armed with a pistol.
3. An observer who sought out targets for the machine gun. He carried extra barrels and ammunition and was armed with a rifle (Kar 98k).
4. A man carrying the Lafette 42 or another tripod. He was armed with an MP 40.
5. An ammunition carrier,

who also carried entrenching tools. He was armed with a Kar 98k.

6. An ammunition carrier, who also carried tools to clean the machine gun. He was armed with a Kar 98k.

An infantry company under attack normally had two squads who

specifically manned the MG 42 as a heavy machine gun. These provided support for the rest of the company, and took a position where they could provide supporting fire.

Companies in defensive positions most often set up MG 42s as a heavy machine gun (provided the terrain made it possible). As a rule, the company alternated between several prepared positions to avoid becoming an easy target for shelling or air strikes.

While fighting, MG 42s could be quickly detached from their tripod and used as light machine guns during a counterattack.



An MG 42 mounted on a tripod.



► taken over by Mauser-Werke. One of its additions was a revolutionary locking mechanism – possibly based on an experimental machine gun that the Wehrmacht had seized during the Poland campaign in 1939. In 1941, Mauser presented MG 39/41, and the army placed an order for 1,500 units to be tested in the field. The weapon worked so well that with only a few changes, mass production swiftly began under the designation MG 42.

The MG 42 fulfilled the same requirements as MG 34 and exceeded the previous model in several areas. MG 42 was admittedly only 20 percent cheaper (250 Reichsmarks versus 312 Reichsmarks for the MG 34), but the simplified manufacturing process meant that only half the time was spent on production and far fewer resources on completing it. This was crucial for the German war economy. In the period 1942–45, 414,964 MG 42 units were produced.

**THE SIMPLE MECHANISM** was also less sensitive to soil and dirt, yet the weapon had a significantly higher firing rate – 1,200 shots per minute against the MG 34's 800. Similar figures for the most common British, Russian and US machine guns were around 600. Allied soldiers soon learned to recognise, and fear, the characteristic sound of an MG 42, which sounded like ripping cloth as opposed to the classic 'ratatat'.

German officers weren't unreservedly positive about the machine gun's high rate of fire. They feared that it would lead to a waste of ammunition. But for the ordinary soldier, the high rate was worth its weight in gold. It meant that the soldiers

**"THE AMERICANS WERE SO IMPRESSED WITH THE MG 42 THAT THEY ATTEMPTED TO MAKE THEIR OWN VERSION"**

could fire a shed-load of bullets at targets for the fraction of a second they were in view on the modern battlefield.

However, the high rate of fire exacerbated the problem of overheating under automatic fire. In order to counteract this, a special muzzle brake was introduced in 1943, which was only used when the weapon functioned as a heavy machine gun. When the MG 42 was used as a light machine gun, the salvos were usually too short to cause problems.

The firing rate in combination with a barrel made from lighter steel than the MG 34's meant the barrel overheated after 250 shots or just over 12 seconds of firing. The solution was a system that made it even easier to replace the barrel than on the previous model. With a single lever, it could be loosened and rotated out of a horizontal slot in the cooling jacket. It was then pulled out and a new one inserted. Trained soldiers did this in just five to seven seconds.

**THE MG 42** had a bipod when used as a light machine gun. The legs could be moved so that

**If the company encountered the enemy the machine gunner often went ahead to get into shooting position.**

JOHANNES HAHLE/BLINDSARCHIV BILD ID1-299-1831-08(CG-BY-SA)





they sat either in front of or behind the barrel. The forward position allowed for more precision when firing, while the rear made it easier to make larger sweeps with the weapon. The vast majority of soldiers preferred the front position and from pictures of the weapon in action, it appears it was the one most frequently used.

When the MG 42 was used as a heavy machine gun, it was placed on a large tripod, a Lafette 42 that, at 20.5 kilograms, weighed almost twice as much as the machine gun itself. An MG 42 could also be mounted on Zwillingsockellafette 36, which was developed so that the MG 34 could be used as an anti-aircraft weapon. It was also proposed to use MG 42s on various vehicles. Throughout the war, however, the MG 34 was the more common self-defence weapon found on vehicles.

All German soldiers had to learn how to use a machine gun, which made it easier to select those who had the most talent for real machine gun operations. According to the tactical doctrines that had been developed in the interwar period, a German machine gun *Gruppe* – squad – comprised two parts: a machine-gun team and a light machine gun support group. Before the war, the machine-gun team, the squad's most important component, was made up of four men but was soon reduced to three (or even two in some cases) during the war: a gunner, a loader and possibly a lookout (the latter two also served as ammunition carriers). The light machine gun support group consisted of eight (later six or only four) men armed with rifles. Unlike the Allied armies, where the machine gun was a support weapon, the support group's main role was to provide protection for the machine gun teams. The group often carried extra ammunition for the machine gun and dug trenches for its crew.

**DURING AN ADVANCE**, the squad usually went in column formation with the machine gun team just behind the squad commander, who took the lead. If there was a risk that the front of the column might suffer losses the machine gun team would drop back but the commander preferred to have them close so that he could place and deploy them at just a few seconds' notice if the enemy appeared.

The light machine gun support group spread into a firing line (after passing any ammunition to the machine gunners) – either to one (right or left) or both sides of the machine guns. Their main task was to protect the machine gunners if the enemy attacked. The main task of the machine-gun team was to fire on the enemy in the subsequent firefight. Only then would the light machine gun support group go in to capture enemy positions.

Before the war, no one expected close-combat situations. The machine gun in combination with



An MG 42 mounted on an anti-aircraft mount. Note the magazine drum with room for 50 cartridges.

manoeuvres around the enemy's flank would either neutralise him or force him to retreat. But this was not the case during World War II. Especially on the Eastern Front, where the leadership on both sides often forbade their men to retreat, close-combat situations were more the rule than the exception.

**THE MG 42 WAS** respected on both sides during the fighting. Among German soldiers, it was known as the *Die Schnellespritze* – the Fast Sprayer – or *Hitlersäge* – Hitler's saw – references to both the weapon's sound and its impact on enemy soldiers. Also, Soviet and US soldiers referred to the sound when they named the MG 42 the "Linoleum ripper" and "Hitler's buzzsaw" respectively. Among British soldiers, it went – along with other German machines guns – under the name of "Spandau", which was on the manufacturer's plate, and referred to the Berlin district of the same name.

The US Army was concerned about the psychological effect of MG 42s on the soldiers and attempted to downplay its effectiveness, but the fact is that the Americans were so impressed with the MG 42 that they attempted to make their own version (the T24), but the project was later abandoned.

After the war, the MG 42 was still used in various conflicts in Europe, Africa and the Middle East. When Western Germany joined NATO in 1955, it commissioned Rheinmetall to produce an updated version adapted to NATO's standard ammunition. The result was the MG 1, which arrived in 1958, and the MG 3, which appeared two years later. The latter is still used by many western armies. A number of other machine guns have been produced since World War II, but the MG 42 and its successors are still considered to be the best. 🇩🇪

Rasmus Kjaerbye Petersen is a military history writer.

Further reading:  
Germany's Infantry Weapons 1939–45 (1998) by Terry Gander  
★ MG 34 and MG 42 Machine Guns (2012) by Chris McNab



1941–45

# Hitler's allies on the Eastern Front

Several countries joined Hitler when Germany attacked the Soviet Union on 22nd June, 1941. However, the abilities of these **brothers in arms** varied greatly. Here we investigate Germany's allies on the Eastern Front.

Text: **CHRISTOFFER REHN**

- 1 Romania
- 2 Italy
- 3 Croatia
- 4 Slovakia
- 5 Hungary
- 6 Finland

## 1. ROMANIA

### Second largest contributor of troops

★ Under the dictatorship of Ion Antonescu, Romania joined the war on Hitler's side in the hope of regaining territory taken by the Soviets in 1940, including Bessarabia (now Moldova).

Romania contributed 325,685 men, the largest number after Germany, but they were not trained in modern warfare and lacked motorised vehicles and heavy weaponry.

Antonescu hoped to buy weapons from Germany, but the Germans, who could barely equip themselves,

feared that the Romanians and Hungarians would end up in a border dispute over Transylvania and therefore refused. Instead, Romania received some of the weapons captured in 1940, including a number of light French tanks.

The Romanians joined the German 11th Army and attacked from the Black Sea coast and northern Romania. With Germany's help, they took back the areas previously ceded to the Soviet Union and also

occupied the city of Odessa on the Black Sea.

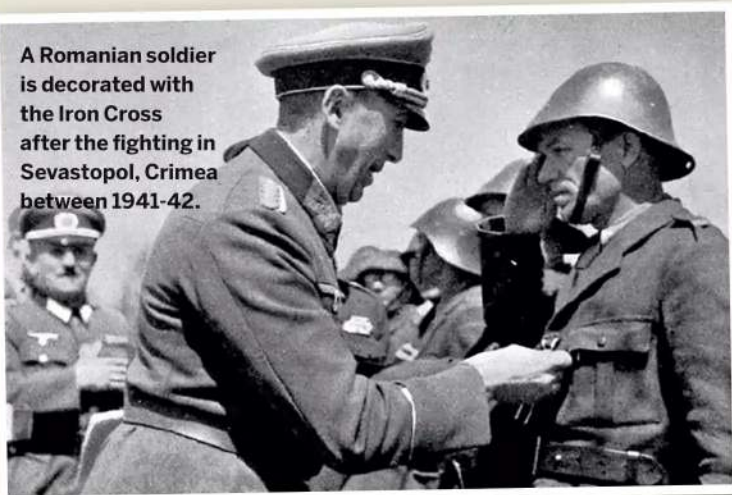
The Germans believed that the Romanians were not equipped for fast mobile warfare and as a result, they often used them for light guard duties and to mop up after the panzer divisions.

In September 1942, over a year after Operation Barbarossa started, the majority of the Romanian units were moved to Stalingrad, where they were grouped as flank guards to the north and south of the city. They requested increased tank and artillery support, but in vain. When the Red Army assaulted their positions with tanks, the Romanians were crushed and the German 6th Army was surrounded.

The remains of the Romanian Army then participated in rear-guard fighting until the Red Army crossed into Romania itself, prompting the country to switch sides on the 25th August, 1944.

Romania's most important contribution to Germany, however, was not military aid, but the country's oil deliveries. 🇷🇴

A Romanian soldier is decorated with the Iron Cross after the fighting in Sevastopol, Crimea between 1941-42.





A black and white photograph showing three Romanian soldiers in a small wooden boat, paddling across a river. The soldiers are wearing helmets and military uniforms. The boat is filled with reeds and other vegetation. In the background, there is a riverbank with trees and a line of smoke or mist. The overall scene suggests a military operation during a conflict.

**“THE ROMANIAN SOLDIERS  
WERE NOT TRAINED IN  
MODERN WARFARE”**

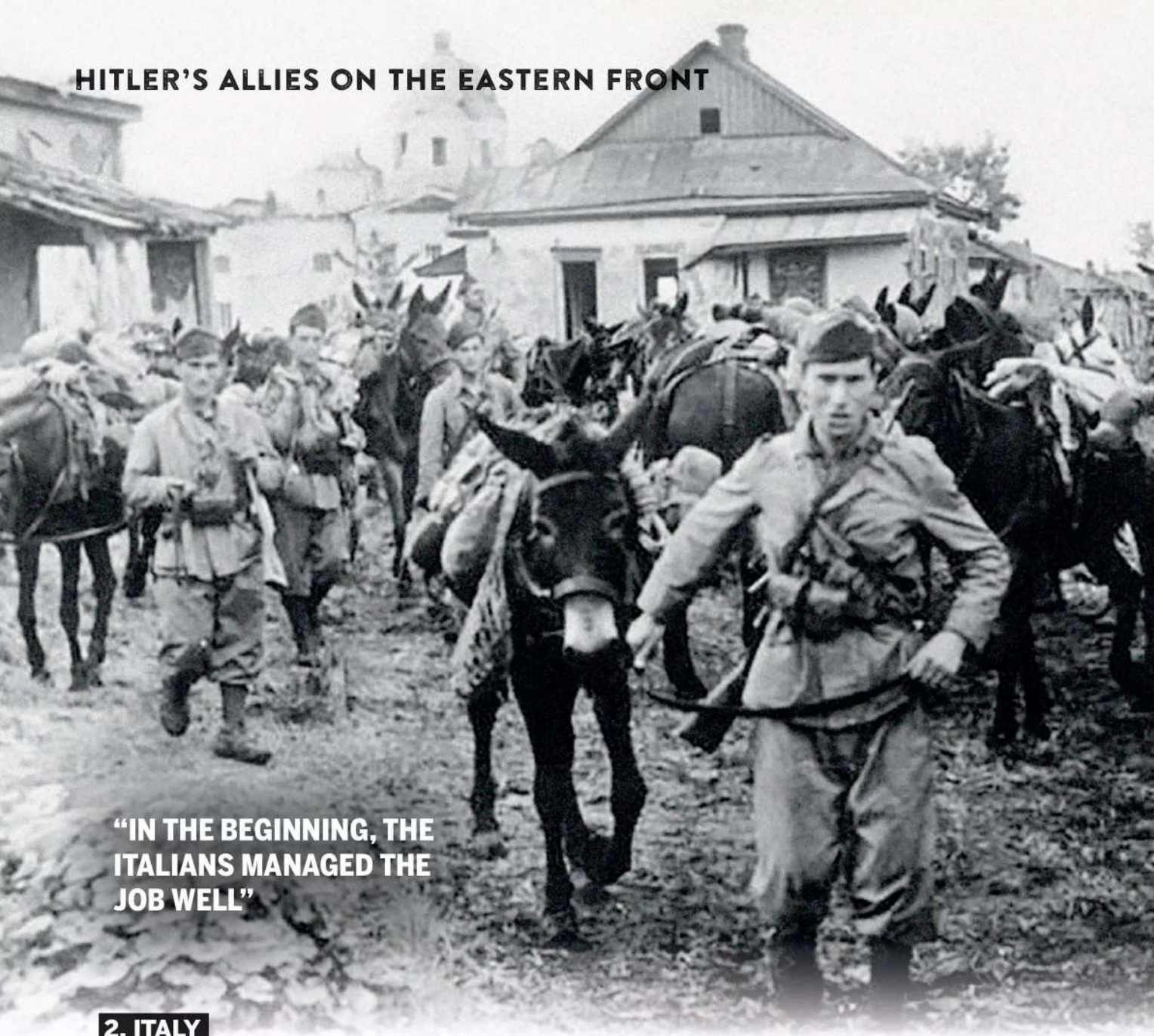
Romanian soldiers paddle  
across a river in the Caucasus  
while grenades crash down all  
around them. October 1942.

KEystone/Getty

**MORE ALLIES ON  
THE NEXT PAGE**



## HITLER'S ALLIES ON THE EASTERN FRONT



**“IN THE BEGINNING, THE ITALIANS MANAGED THE JOB WELL”**

### 2. ITALY

## Brave in a fixed position

★ The Italian Expedition Corps in Russia arrived at the front in July 1941. The force consisted of three motorised militia divisions and a strong corps, including sappers, anti-tank and anti-aircraft units: a total of 62,000 men, 5,500 motor vehicles, 220 artillery and 92 anti-tank guns, just over 4,000 draught animals and 83 aircraft.

Like the Romanians, the Italians initially joined the German 11th Army, but in August they were transferred to the 1st Panzer Army near Rostov. There,

they were used as a buffer between the Romanians and the Hungarians.

Initially, the Italians managed the task well, and even surrounded and captured 10,000 Russian soldiers at Petrikowka in Ukraine in September 1941. At Christmas they also stopped — with German help — a powerful Soviet counterattack at Donetsk.

In 1942, Mussolini sent a re-established 8th Army with 230,000 men, artillery pieces, motor vehicles and draught animals to the Eastern Front.

There, the Italians supplied a flank guard north of Stalingrad, where they fought hard, but were almost entirely destroyed by Soviet forces.

The poorly trained Italian units fought bravely when in a fixed position, but were unable to organise themselves during a withdrawal.

In March and April 1943, the remaining troops returned to Italy to await a refit, but the units were instead dissolved after Italy's surrender in October 1943. 🇮🇹



Italian soldiers transport their equipment on donkeys in July 1942, six months before the Italian Army in Russia was almost annihilated at the Battle of Stalingrad.



BUNDESARCHIV, Bild 183-B-27180/LAGMANN/GC-BVSA 3.0



An Italian elite soldier, a *Bersagliere*, with a distinctive feather in his helmet, checks the horizon with his binoculars.



Croatian pilots in front of a Dornier Do 17 bomber in 1942.

### 3. CROATIA

## Victorious pilots were hailed by Hitler

★ When Germany annexed Yugoslavia on 6th April, 1941, General Ante Pavelic became head of a puppet regime in Croatia. The Croats were respected by the Germans because they had fought together in World War I. Hitler, therefore, thanked Pavelic after he equipped 5,000 volunteers after the German fashion and set up two bomber and fighter squadrons. The Croatian infantry units were incorporated into the German 17th Army and participated in the capture of Kharkov, in today's Ukraine.

According to contemporary war diaries, the Croats had problems with discipline. Many soldiers went AWOL to spend time with Russian women, and more were sentenced to death by the Germans. Records

described the men as "Good on the attack, provided their bellies are full and there's enough schnapps to go around. Not very steadfast in defence, with a tendency to react in a panic if attacked unexpectedly."

The Croats were positioned in the front line, near the Red October factory in Stalingrad. In the hard street battles that followed, the regiment was almost erased. After that, its efforts consisted mainly of combating partisans at home.

The pilots did better and were hailed by Hitler himself. They notched up 283 'kills' and made around 1,500 bombing runs on the Eastern Front. 🇷🇺

**MORE ALLIES ON THE NEXT PAGE**



# HITLER'S ALLIES ON THE EASTERN FRONT

## 4. SLOVAKIA

### Had its own 'Stalingrad' in the Crimea

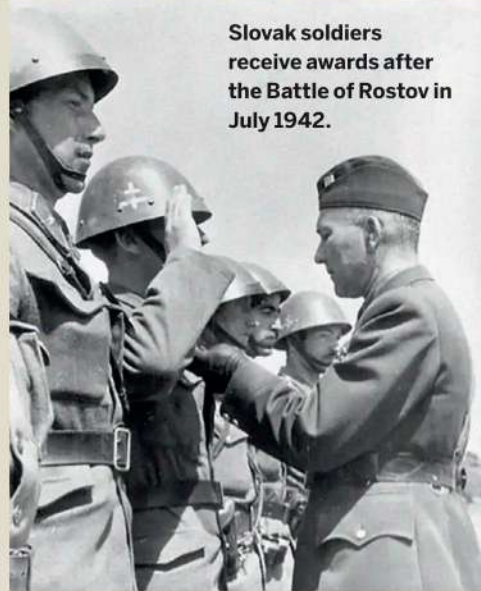
★ Slovakia was established in March 1939, after Germany captured Czechoslovakia. An authoritarian regime took power in the new country.

When Hitler attacked the Soviets, Slovakia mobilised its forces. An elite unit of 3,500 men with outdated, light Czech tanks entered battle at Lipowiec in Poland on 22nd July, 1941. As part of the German 17th Army, the force pursued the enemy, but they were pushed back when the Red Army strengthened its defence. After that, the Slovaks

were mainly used for guard duty and fighting local partisans.

However, during Xmas 1941, they held a section of the front line in the Caucasus and, in March 1943, were asked to defend a section of the frontline on the Crimean Peninsula. The resulting battle became known as the 'Stalingrad of Slovakia'. The whole division was eliminated in 24 hours, with many of the soldiers deserting.

In autumn 1944, rebellion erupted in Slovakia, which ended the authoritarian republic. 🇸🇰



Slovak soldiers receive awards after the Battle of Rostov in July 1942.

NARODOWE ARCHIWUM CYFROWE

## 5. HUNGARY

### Pincer move led to victory

★ Fascistic Hungary had participated in Germany's attack on Yugoslavia in 1940 and reclaimed areas that had been lost during the World War I. But Hungary only declared war on the Soviet Union after the Hungarian town of Kassa (today Košice in Slovakia) was bombed on the 26th June, 1941. There is some speculation by modern historians that the attack was organised

by the Germans to give the Hungarians a reason to fight.

The Hungarians joined the fight with 45,000 men and 160 light tanks. Initially, they met with very little opposition as they marched into the Soviet Ukraine.

The Hungarian force served mainly as reserve behind the German advance, but during the Battle of Uman it was given a more important role. The

**Hungarian soldiers with a heavy machine gun on the Eastern Front. The picture was taken in the winter of 1942-43.**

mechanised corps, which had been incorporated into the German 17th Army, participated in a pincer manoeuvre which defeated 20 Soviet divisions.

When Operation Barbarossa stalled, Hungary's fascist regent, Miklós Horthy, decided to withdraw his troops. However, Hitler demanded that the Hungarians take charge of a section of the front north of Stalingrad. The Hungarian force was reinforced by several hundred thousand men, but there was a shortage of anti-tank guns. The Hungarians suffered enormous losses when the Red Army attacked across the lines.

The rest of the army was crushed in the Battle of Voronezh, and 100,000 Hungarians were taken captive as they attempted to flee.

In March 1944, Germany took control of Hungary to prevent peace talks with the enemy. 🇮🇪

ULLSTEIN/GETTY





**“HITLER WAS IMPRESSED  
WITH THE FINNS”**

Finnish soldiers cross  
the 1940 border two  
days after the outbreak  
of the Continuation War.

## 6. FINLAND

# Effective army that chose its own path

★ Hitler needed to cross Finnish territory during Operation Barbarossa, which led the Führer to declare, somewhat precipitously, that the Finns were on his side. The statement was enough for the Soviets, though, who bombed Helsinki, Turku and Borgo on 25th June.

The next day, Finland declared war on the Soviet Union, and 15 days later launched an assault with 13 divisions and 200,000 men across the Karelian headland. The Soviet-Finnish Continuation War was underway. The Finns also sent two divisions to help Hitler capture Murmansk.

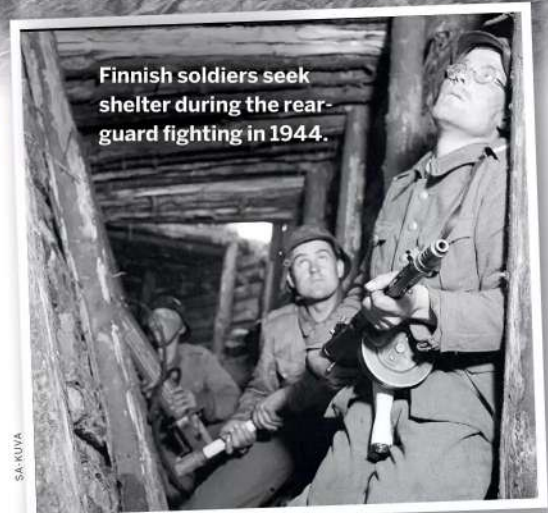
The Finnish army was not heavily motorised, but that was less important in Karelia's forested terrain. The Finns recaptured Vyborg in August

and reached the old border in September. The Finns then captured Petrovskoye before General Carl Mannerheim, the head of the Finnish Army, brought the advance to a stop.

Hitler was impressed with the Finns and gave them a separate area of operations. But the Finns advanced only 250 km into the Soviet Union, in an area of little strategic importance to Hitler, who – in addition to Murmansk – wanted to capture Leningrad, which Mannerheim refused to do.

From 1942, Finland tried to broker a peace with the Soviet Union, but Stalin's insistence that the 1940 border should apply was unacceptable to the Finns.

In June 1944, the Red Army launched an assault to break the Finns once and for all. The



Finnish soldiers were forced to retreat. After a series of rear-guard battles, accompanied by high losses and punctuated by defensive victories, including the Battle of Tali-Ihantala, Finland signed the peace treaty on 4th September, 1944. As part of the agreement, the Finns promised to drive the Germans out of Finland. The Continuation War was over, but the Lapland War was just beginning. ★

**Further  
reading:  
Hitler's  
Wehrmacht  
(2016) by Rolf-  
Dieter Müller.**



# HITLER AT WAR

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**FOLLOW THE  
TACTICS WITH  
DETAILED MAPS**

# How the Nazis stormed Europe

At first sight, Germany's victories between 1939-41 seem to have been built on revolutionary tactics and new weapons, but perhaps officers who were encouraged to think for themselves and a renewed sense of national pride were the real reasons for the Wehrmacht's invincibility at the start of WWII. We look in detail at Hitler's early triumphs, his own command capabilities and the weapons at his disposal to reveal how the Nazis became the masters of Europe in less than two years...

**AMAZING  
PHOTOS**

**GERMAN GEORGES JÄGER 1915-45  
ELITE FORCE**

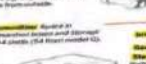
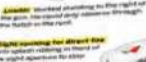
**AT ITS BEST**

**EYEWITNESS  
HISTORY**

**MINUTE-BY-MINUTE  
COVERAGE - AS IT  
HAPPENED**

**StuG III**

The StuG III assault gun and (later) tank destroyer was the German gun-equipped combat vehicle produced in the greatest numbers during World War II, a total of 5,409 units.



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